Inspector General

Overview

The NASA Office of Inspector General (OIG) budget request for FY 2010 is $36.4 million. The NASA OIG consists of 186 auditors, analysts, specialists, investigators, and support staff at NASA Headquarters in Washington, DC, and NASA Centers throughout the United States. The FY 2010 request supports the OIG mission to prevent and detect crime, fraud, waste, abuse, and mismanagement while promoting economy, effectiveness, and efficiency within the Agency.

The OIG Office of Audits (OA) conducts independent, objective audits and reviews of NASA and NASA contractor programs and projects to improve NASA operations, as well as a broad range of professional audit and advisory services. It also comments on NASA policies and is responsible for the oversight of audits performed under contract. OA helps NASA accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the economy, efficiency, and effectiveness of NASA operations.

The OIG Office of Investigations (OI) identifies, investigates, and refers for prosecution cases of crime, waste, fraud, and abuse in NASA programs and operations. The OIG's federal law enforcement officers investigate false claims, false statements, conspiracy, theft, computer crimes, mail fraud, and violations of federal laws, such as the Procurement Integrity Act and the Anti-Kickback Act. Through its investigations, OI also seeks to prevent and deter crime at NASA.

NASA's FY 2010 OIG request is broken out as follows:

- $30.5 million (84 percent) of the proposed budget is dedicated to personnel and related costs, including salaries, benefits, monetary awards, worker's compensation, permanent change of station costs, as well as the Government's contributions for Social Security, Medicare, health and life insurance, retirement accounts, and matching contributions to Thrift Savings Plan accounts. Salaries include the required additional 25 percent law enforcement availability pay for criminal investigators.

- $1.3 million (3 percent) of the proposed budget is dedicated to travel, per diem at current rates, and related expenses. The OIG staff is located at 12 offices on or near NASA installations and contractor facilities.

- $4.6 million (13 percent) of the proposed budget is dedicated to operations and equipment primarily funding for the Agency's annual financial audit, and also includes funding for training, government vehicles, special equipment for criminal investigators, metro subsidies, and information technology equipment unique to the OIG.

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	**32.6**	**35.6**	**36.4**	**37.0**	**37.8**	**38.7**	**39.6**
Inspector General	32.6	35.6	36.4	37.0	37.8	38.7	39.6
FY 2009 President's Budget Request	**32.6**	**35.5**	**36.4**	**37.3**	**38.3**	**39.2**	**--**
Inspector General	32.6	35.5	36.4	37.3	38.3	39.2	--
Total Change from FY 2009 President's Budget Request	**0.0**	**0.1**	**0.0**	**-0.3**	**-0.5**	**-0.5**	**--**

Note: In all budget tables, the FY 2010 President's Budget Request depicts the September 2008 Operating Plan for the 2008 Actuals and the 2009 Omnibus Appropriations Act (P.L. 111-8) and the American Recovery and Reinvestment Act (P.L. 111-5) for the 2009 enacted. In accordance with the Inspector General Reform Act of 2008 (P.L. 110-409), the Inspector General certifies that the $.4M for staff training and $.1M to support the Council of Inspectors General on Economy and Efficiency included in the budget request satisfies all known training requirements and planned contributions to the Council.

Plans for FY 2010

Inspector General

Inspector General

New Initiatives:

None

Major Changes:

None

Major Highlights for FY 2010

The FY 2010 budget estimates for the IG is a total of $36.4 million:

Personnel and related costs	$30.5 million
Travel	$1.3 million
Operations and Equipment	$4.6 million

SUPPORTING DATA TABLE OF CONTENTS

Supporting Data: Civil Service Full-Time Equivalent (FTE) Distribution by Center

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FUNDS DISTRIBUTION BY INSTALLATION

($ in Millions)	FY 2009 Current[1]	FY 2010 Estimate[2]
Ames Research Center	**$611.2**	**$615.2**
Science	$159.4	$188.9
Aeronautics Research	$99.4	$104.0
Exploration Systems	$75.9	$70.8
Space Operations	$16.2	$2.3
Education	$5.5	$5.2
Cross-Agency Support	$254.7	$244.2
Dryden Flight Research Center	**$245.9**	**$271.9**
Science	$53.9	$53.8
Aeronautics Research	$44.1	$60.8
Exploration Systems	$39.8	$39.8
Space Operations	$4.0	$4.4
Education	$14.7	$14.8
Cross-Agency Support	$89.3	$98.4
Glenn Research Center	**$580.1**	**$631.6**
Science	$27.2	$26.6
Aeronautics Research	$117.8	$139.0
Exploration Systems	$126.7	$118.5
Space Operations	$29.2	$24.8
Education	$9.3	$15.1
Cross-Agency Support	$269.9	$307.6
Goddard Space Flight Center	**$2,832.7**	**$2,622.2**
Science	$2,035.1	$1,978.4
Aeronautics Research	$0.2	$0.0
Exploration Systems	$28.7	$22.1
Space Operations	$296.2	$121.5
Education	$4.5	$2.3
Cross-Agency Support	$468.0	$497.9
Jet Propulsion Laboratory	**$1,346.4**	**$1,271.7**
Science	$1,116.8	$1,013.3
Exploration Systems	$23.4	$40.9
Space Operations	$170.2	$179.6
Education	$1.0	$9.2
Cross-Agency Support	$34.9	$28.8
Johnson Space Center	**$5,897.1**	**$6,269.7**
Science	$34.5	$27.4
Exploration Systems	$1,846.8	$1,740.3
Space Operations	$3,530.4	$4,034.2
Education	$7.0	$8.7
Cross-Agency Support	$478.4	$459.1

[1] FY 2009 current budget includes $1B in budget authority at Headquarters. These funds will be distributed to Centers upon approval of Recovery plans. In addition, FY 2009 and 2010 estimates include program funds not yet allocated to Centers.

[2] The human spaceflight review may result in changes to the budget for Exploration activities.

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FUNDS DISTRIBUTION BY INSTALLATION (CONTINUED)

($ in Millions)	FY 2009 Current[3]	FY 2010 Estimate[4]
Kennedy Space Center	**$1,415.0**	**$1,369.9**
Science	$312.2	$257.9
Exploration Systems	$308.8	$321.5
Space Operations	$385.6	$361.1
Education	$4.8	$3.8
Cross-Agency Support	$403.6	$425.5
Langley Research Center	**$651.4**	**$648.2**
Science	$58.7	$60.0
Aeronautics Research	$154.5	$170.1
Exploration Systems	$102.6	$77.6
Space Operations	$7.2	$0.9
Education	$9.4	$9.7
Cross-Agency Support	$319.0	$329.9
Marshall Space Flight Center	**$2,522.2**	**$2,785.0**
Science	$132.1	$128.8
Exploration Systems	$845.8	$1,373.0
Space Operations	$1,092.2	$829.1
Education	$3.2	$4.7
Cross-Agency Support	$449.0	$449.4
NASA Headquarters	**$2,462.8**	**$2,001.2**
Science	$969.4	$739.1
Aeronautics Research	$233.9	$33.1
Exploration Systems	$431.3	$73.8
Space Operations	$164.6	$579.1
Education	$108.9	$52.0
Cross-Agency Support	$519.0	$487.8
Inspector General	$35.6	$36.4
Stennis Space Center	**$219.5**	**$199.3**
Science	$3.5	$3.2
Exploration Systems	$75.6	$85.0
Space Operations	$68.9	$38.5
Education	$0.9	$0.6
Cross-Agency Support	$70.6	$72.0
Total	**$18,784.4**	**$18,686.0**

[3] FY 2009 current budget includes $1B in budget authority at Headquarters. These funds will be distributed to Centers upon approval of Recovery plans. In addition, FY 2009 and 2010 estimates include program funds not yet allocated to Centers

[4] The human spaceflight review may result in changes to the budget for Exploration activities.

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CIVIL SERVICE FULL TIME EQUIVALENT DISTRIBUTION BY CENTER

NASA is well on its way toward retirement of the Space Shuttle and the development of the Orion Crew Exploration and Ares I Launch Vehicles, the first two in a suite of vehicles supporting the Agency's Exploration missions. In addition, NASA is still sustaining operations on the International Space Station and continues to support vibrant science and aeronautics programs. NASA continues to plan its workforce needs based on the skills needed to complete all of its missions. Every year, a thorough workforce planning analysis is completed to determine what skills are needed to complete NASA's programs and projects. Over the past couple of years, some of NASA's skill needs have shifted because of the move from a Shuttle based fleet to the design and development of Exploration Vehicles. The resulting shift in workforce competencies have been (and continue to be) accomplished by retraining and reassignment of the critical civil service workforce.

The workforce levels as proposed reflect the results of a grassroots planning activity to match workforce at the centers with demand across all Agency programs and projects. In order to ensure that the necessary skills are available to meet the work demand of current and future programs and projects, maintaining a total workforce level of 17,900 FTE, while reshaping the skills, is vitally important to meeting the challenges of NASA's current and future commitments.

To facilitate this reshaping, NASA is implementing a number of actions to ensure that its future workforce has the needed skills to perform the work, is more flexible to programmatic work demand shifts, and has a younger and healthier age profile. Some of these actions include implementing buyouts in surplus skill areas, implementing strategies for recruiting and retaining critical personnel, excluding students -mainly those in the Student Career Experience Program (SCEP–CO-OP) – from FTE ceilings, and moving toward a goal of having no more than 85% of all Civil Service Science and Engineering employees employed as Full-Time Permanent Employees. These strategies are making good use of the flexibilities granted to the Agency in the NASA Flexibility Act of 2004. Finally, with the implementation of agency workforce planning strategies during the past couple of years, NASA has eliminated previously forecasted uncovered workforce at each location through the budget planning horizon.

	ACTUALS*	FTE ESTIMATES (Excludes Student FTEs)					
Center	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**FY 2014**
ARC	**1,274**	**1,202**	**1,202**	**1,202**	**1,202**	**1,202**	**1,202**
DFRC	**555**	**525**	**525**	**525**	**525**	**525**	**525**
GRC	**1,637**	**1,619**	**1,619**	**1,619**	**1,619**	**1,619**	**1,619**
GSFC	**3,124**	**3,143**	**3,143**	**3,143**	**3,143**	**3,143**	**3,143**
JSC	**3,308**	**3,265**	**3,265**	**3,265**	**3,265**	**3,265**	**3,265**
KSC	**2,201**	**2,106**	**2,106**	**2,106**	**2,106**	**2,106**	**2,106**
LaRC	**1,911**	**1,891**	**1,891**	**1,891**	**1,891**	**1,891**	**1,891**
MSFC	**2,565**	**2,541**	**2,541**	**2,541**	**2,541**	**2,541**	**2,541**
SSC	**268**	**265**	**265**	**265**	**265**	**265**	**265**
HQ	**1,193**	**1,200**	**1,200**	**1,200**	**1,200**	**1,200**	**1,200**
NSSC	**123**	**143**	**143**	**143**	**143**	**143**	**143**
Total	**18,159**	**17,900**	**17,900**	**17,900**	**17,900**	**17,900**	**17,900**

*** FY 2008 FTE actuals include 218 Student FTEs; FY 2009-2014 Estimated FTEs do not include estimated student FTEs of 267 for each fiscal year.**

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BUDGET FOR FY 2010 BY OBJECT CLASS CODE

The following tables reflect projections of obligations for FY 2010 based on FY 2008 actual obligations. The tables and data are organized to reflect the Mission Directorate structure which began in FY 2009 budget.

FY 2010 Total and Mission Directorate Estimates ($M)	NASA	SCIENCE	AERONAUTICS	EXPLORATION *	SPACE OPERATIONS	EDUCATION	CROSS AGENCY SUPPORT
Personnel compensation							
Full-time permanent	$1,820.0	$194.3	$142.2	$361.0	$319.0	$4.3	$799.2
Other than full-time permanent	$149.2	$11.0	$11.2	$38.0	$36.2	$0.5	$52.2
Other personnel compensation	$50.9	$1.1	$0.8	$3.8	$4.3	$0.0	$40.9
Special personal service payments	$0.8	$0.0	$0.0	$0.1	$0.1	$0.0	$0.7
Total Personnel compensation	**$2,020.9**	**$206.4**	**$154.2**	**$402.9**	**$359.5**	**$4.8**	**$893.0**
Civilian personnel benefits	$513.7	$50.9	$37.5	$102.9	$91.9	$1.2	$229.3
Benefits to former personnel	$3.7	$0.1	$0.4	$0.4	$0.1	$0.0	$2.6
Travel & transportation of persons	$105.0	$18.4	$6.4	$22.0	$18.2	$0.5	$39.5
Transportation of things	$222.2	$2.0	$0.3	$137.8	$78.2	$0.0	$3.9
Rental payments to GSA	$36.4	$0.0	$0.0	$0.0	$0.0	$0.0	$36.3
Rental payments to others	$13.0	$5.1	$0.1	$3.0	$2.7	$0.0	$2.2
Communications, utilities & misc charges	$137.5	$3.1	$2.4	$10.2	$54.1	$0.0	$67.5
Printing and reproduction	$10.5	$2.3	$0.3	$1.3	$1.8	$0.1	$4.7
Advisory and assistance services	$681.4	$136.0	$16.9	$302.6	$43.7	$4.1	$178.3
Other services	$881.4	$218.6	$32.8	$119.9	$162.7	$11.5	$335.9
Other purchases of goods & services from Gov accounts	$495.9	$154.3	$9.5	$60.8	$187.7	$1.0	$82.7
Operation and maintenance of facilities	$2,421.6	$12.5	$24.7	$194.6	$1,814.5	$1.5	$373.8
Research & development contracts	$8,467.0	$2,853.0	$170.0	$2,212.0	$2,878.3	$9.7	$344.1
Medical care	$5.3	$0.0	$0.0	$0.0	$0.5	$0.0	$4.8
Operation and maintenance of equipment	$684.6	$54.5	$10.7	$66.8	$203.6	$3.5	$345.4
Supplies and materials	$186.5	$22.6	$14.2	$37.6	$59.6	$0.6	$51.9
Equipment	$333.6	$60.9	$23.4	$29.5	$156.3	$0.4	$63.1
Land and structures	$531.6	$60.2	$4.4	$167.0	$48.5	$0.0	$251.5
Grants, subsidies, and contributions	$969.1	$636.9	$51.2	$90.6	$5.5	$95.7	$89.2
TOTAL DIRECT	**$18,720.8**	**$4,497.7**	**$559.4**	**$3,961.9**	**$6,167.4**	**$134.7**	**$3,399.7**

* The human spaceflight review may result in changes to the budget for Exploration activities.

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STATUS OF UNOBLIGATED FUNDS

The figures below represent actual unobligated balances within NASA's individual appropriation accounts as of September 30, 2008, and estimates for the disposition of those accounts at the future dates specified.

FY 2008 – FY 2010 Appropriations ($ in millions)	Unobligated Balances Sept. 30, 2008	Estimated Unobligated Balances Sept. 30, 2009	Estimated Unobligated Balances Sept. 30, 2010
Science, Exploration, & Aeronautics	345		
Science		110	90
Exploration		78	79
Aeronautics		63	10
Education		34	25
Cross-Agency Support		67	68
Exploration Capabilities	100		
Space Operations		115	124
Inspector General	0	2	1
Total NASA	**445**	**469**	**397**

Prior Year Appropriations ($ in millions)	Unobligated Balances Sept. 30, 2008	Estimated Unobligated Balances Sept. 30, 2009	Estimated Unobligated Balances Sept. 30, 2010
Science, Exploration, & Aeronautics	49		
Science			
Exploration			
Aeronautics			
Education			
Cross-Agency Support			
Exploration Capabilities	64		
Space Operations			
Total NASA	**113**	**0**	**0**

Totals may not add due to rounding

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REIMBURSABLE ESTIMATES

Reimbursable agreements are agreements where the NASA costs associated with the undertaking are borne by the non-NASA partner. NASA undertakes reimbursable agreements when it has equipment, facilities, and services that it can make available to others in a manner that does not interfere with NASA mission requirements. As most reimbursable requests to NASA do not occur until the year of execution, the FY 2010 estimate is based on historical data.

Budget Authority ($ in millions)	FY 2008 Actuals	FY 2009 Enacted	FY 2010
Science, Aeronautics & Exploration	**693.2**		
Science	***556.5***		
Exploration	***16.5***		
Aeronautics	***95.8***		
Cross-Agency Support	***24.4***		
Exploration Capabilities	**321.9**		
Space Operations	***321.9***		
Cross Agency Support		**1,474.6**	**1,575.2**
Office of Inspector General	**0.4**	**1.5**	**1.5**
Total	**1,015.5**	**1,476.1**	**1,576.7**

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ENHANCED USE LEASING

In 2003, NASA was authorized by Congress to demonstrate leasing authority and collections at two Centers. In 2007 and in 2008, that authority was amended by Congress such that NASA may enter into leasing arrangements at all Centers after December 2008. After deducting the costs of administering the leases, Centers are then permitted to retain 65% of net receipt revenue, and the balance is made available agency-wide for NASA. These funds are in addition to annual appropriations. To ensure annual oversight and review, the FY 2009 Appropriations bill, P.L. 111-8 contains a provision that requires NASA to submit a separate accounting of leasing collections and proposed expenditures in its annual budget justification submission to Congress. There are no civil servants funded from EUL income.

FY2010 EUL Expenses and Revenues ($K)	ARC	KSC	Total
Base Rent	$ 5,196.7	35.7	5,232.4
Institutional Support Income	1,803.7	21.0	1,824.7
Total Rent Income	**$ 7,000.4**	**56.7**	**7,057.1**
Institutional Support Costs	$ (1,803.7)	(21.0)	(1,824.7)
Lease Management and Administration	(700.0)	-	(700.0)
Tenant Building Maintenance and Repair	(310.5)	-	(310.5)
Total Cost Associated with Leases	**$ (2,814.2)**	**(21.0)**	**(2,835.2)**
Net Revenue from Lease Activity	**$ 4,186.2**	**35.7**	**4,221.9**
Beginning Balance, Capital Asset Account	**534.2**	**37.7**	**571.9**
Net Revenue from Lease Activity	**$ 4,186.2**	**$ 35.7**	**$ 4,221.9**
- Various Historic Building or Safety Renovation Projects	(3,381.7)		(3,381.7)
- Capital Revitalization & Property Improvements		(49.1)	(49.1)
Center Capital Asset Account Expenditures	**$ (3,381.7)**	**$ (49.1)**	**$ (3,430.8)**
Capital Asset Account Ending Balance	**$ 1,338.7**	**$ 24.3**	**$ 1,363.0**
Additional Reimbursable Demand Services Requested by Leasees (including overhead)	$ 1,814.1		$ 1,814.1
Cost to Fulfill Reimbursable Demand Services (including overhead)	(1,814.1)		(1,814.1)
Net activity due to Reimbursable Demand Services	**$ -**	**$ -**	**$ -**
			-
In Kind	**$ 425.0**	**$ -**	**$ 425.0**

Definitions:

Base Rent - Revenue collected from tenant for rent of land or buildings.

Institutional Support Costs - Cost for institutional shared services such as fire, security, first responder, communications, common grounds, road, and infrastructure maintenance, and routine administrative support and management oversight (i.e., environmental).

Total Rental Income - Total gross proceeds from EUL activities for expenses due to renting NASA property.

In-Kind - Consideration accepted in lieu of rent payment. (Only applies to selected leases signed prior to Jan 1, 2009).

Reimbursable Demand Services - Services such as janitorial, communications, and maintenance that solely benefit the tenant and provided for their convenience. There is no net income received by NASA, as these payments may only cover the costs of NASA and its vendors providing these services.

Overhead - General and administrative costs associated with management of the specified demand services.

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BUDGET FOR MICROGRAVITY SCIENCE

The Exploration Systems Mission Directorate (ESMD) and Space Operations Mission Directorate (SOMD) support research to take advantage of the unique environment of reduced gravity in two broad categories – Exploration and Non-Exploration ISS Research.

$ in millions	FY2008 Actuals	FY2009 Enacted	FY2010*	FY2011*	FY2012*	FY2013*	FY2014*
Exploration ISS Research	$135	$151	$132	$139	$138	$145	$138
Non- Exploration ISS Research	$41	$44	$31	$29	$28	$28	$27
Total	**$177**	**$195**	**$164**	**$168**	**$166**	**$173**	**$165**
% of Non-Exploration to Total	23%	23%	19%	17%	17%	16%	16%

** Funds for ISS research may be re-planned as a result of the review of human spaceflight. At least 15% will still go to non-Exploration research.*

As a result of the FY 2009 appropriations, funding for the ISS Research project under the Exploration Systems Mission Directorate was increased by $20M.

Exploration ISS Research

Exploration ISS Research supports the Agency's need for improved knowledge about working and living in space to enable long-duration human exploration missions in the future.

The Human Research Program will provide research results that reduce risks to crew health and performance that stem from prolonged exposure to reduced gravity, space radiation and isolation during exploration missions. Risk mitigation and countermeasure development will be achieved by conducting ISS research in human health countermeasures, space human factors and habitability, behavioral health and performance, and exploration medicine tools and technologies.

The Exploration Technology Development Program will investigate the underlying gravity-dependent phenomena in the following areas: fire prevention, detection, and suppression, boiling, multiphase flow of fluids and capillary driven flow. These applied research investigations will provide needed data that is useful in the future design of the following space technology areas: life support systems, propellant storage, power generation, thermal control, and advanced environmental monitoring and control. The above table also includes the portion of the Multi-User System Support (MUSS) which supports Exploration ISS Research.

Non-Exploration ISS Research

NASA allocates at least 15 percent of the funds budgeted for ISS research to ground-based, free-flyer, and ISS life and physical science research that is not directly related to supporting the human space exploration program. The purpose is to ensure the capacity to support ground-based research leading to space-based basic and applied scientific research in a variety of disciplines with potential direct national benefits and applications that can be advanced significantly from the uniqueness of microgravity and the space environment. Also, to carry out, to the maximum extent practicable, basic ISS research in fields such as, animal research, basic fluid physics, combustion science, cellular biotechnology, low-temperature physics, cellular research, materials science and plant research at a level that will sustain the existing United States scientific expertise and research capability in microgravity research. The above table also includes the Alpha Magnetic Spectrometer, and that portion of the MUSS which supports Non-Exploration ISS research.

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BUDGET FOR SAFETY OVERSIGHT

The following tabular information provides the budget planning estimate for civil service and support contractor staffing support needed by NASA to support safety and mission assurance program work associated with the mission of NASA. This includes both the safety management for the institutional safety program as well as the elements of safety, reliability, maintainability and quality support and independent authority for programs and projects managed by NASA' s Mission Directorates. To the extent that we have been able to determine from prime contractors, we have also included resources devoted to safety, reliability, maintainability or quality. The budget run out will be updated as the Agency completes its refinement of transition costs associated with the retirement of the Space Shuttle and the development of Constellation Systems components.

BUDGET SUMMARY FOR SAFETY OVERSIGHT

$ in Millions	FY 2008 Actuals	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Total Safety Oversight	**435.3**	**495.6**	**481.6**	**427.8**	**445.9**	**459.1**	**473.5**
Aeronautics	**0.08**	**0.12**					
Exploration	**58.4**	**134.8**	**135.5**	**158.7**	**176.8**	**181.4**	**181.4**
Science	**45.2**	**31.4**	**17.5**	**13.7**	**12.0**	**11.6**	**10.5**
Space Operations	**110.2**	**109.9**	**105.7**	**26.5**	**21.9**	**22.5**	**21.9**
Agency-wide Safety Oversight	**221.5**	**219.3**	**222.9**	**229.0**	**235.2**	**243.6**	**259.7**

Supporting Data: Budget for Public Relations

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BUDGET FOR PUBLIC RELATIONS BY CENTER

The NASA budget for Public Affairs is not funded by programs. Instead, it is budgeted in two separate accounts under 1) Center Management and Operations (CMO) and 2) Agency Management and Operations. All the Installations listed below except for Headquarters are in the CMO account and the Headquarters budget is in the Agency Management and Operations account.

These budgets include dissemination of information to the news media and the general public concerning NASA programs. Content includes support for public affairs/public relations, Center newsletters, internal communications, guest operations (including bus transportation), public inquiries, NASA TV, nasa.gov portal and other multimedia support.
Funding by installation is shown below.

Center ($ in millions)	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Ames Research Center	1.0	1.1	1.1	1.2	1.2	1.2
Dryden Flight Research Center	0.7	0.7	0.7	0.8	0.8	0.8
Glenn Research Center	1.9	2.2	2.3	2.4	2.4	2.5
Goddard Space Flight Center	3.6	4.1	4.3	4.5	4.8	5.0
Headquarters	7.9	8.4	8.3	8.3	8.4	8.8
Johnson Space Center	6.6	4.2	4.2	4.2	4.2	4.2
Kennedy Space Center	4.7	5.5	4.7	5.1	5.3	5.3
Langley Research Center	2.1	1.9	1.9	2.0	2.1	2.1
Marshall Space Flight Center	2.7	2.7	2.7	2.7	2.7	2.7
Stennis Space Center	1.4	1.4	1.3	1.4	1.4	1.4
Total	**32.6**	**32.2**	**31.5**	**32.6**	**33.3**	**34.0**

Totals may not add due to rounding

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SUMMARY OF CONSULTING SERVICES

NASA uses paid experts and consultants to provide advice and expertise to or beyond that which is available from its in-house civil service workforce. Management controls are established which assure that before entering into a consultant or expert services arrangement with an individual that there is ample justification.

A majority of the expert and consultant services are used by the NASA Advisory Council and the Aerospace Safety Advisory Panel. NASA uses experts and consultants to provide expertise on the selection of experiments for future space missions. The use of these experts and consultants provides the Agency with an independent view that assures the selection of experiments likely to have the greatest scientific merit. Other individuals are used to provide independent looks at technical and functional problems in order to give top management the widest possible range of views before making major decisions.

Expert/Consultants (Total NASA)	FY 2008 Actuals	FY 2009 Enacted	FY 2010
Number of Paid Experts and Consultants	42	42	42
Annual FTE Usage	5	5	5
Salaries	$.4	$.4	$.5
Total Salary and Benefits Costs	$.5	$.5	$.5
Travel Costs	$.4	$.4	$.4
Total Costs	**$.8**	**$.8**	**$.9**

Note: Definition of Consultants and Experts

A *consultant* is a person who can provide valuable and pertinent advice generally drawn from a high degree of broad administrative, professional, or technical knowledge or experience. When an agency requires public advisory participation, a consultant also may be a person who is affected by a particular program and can provide useful views from personal experience.

An *expert* is a person who is specially qualified by education and experience to perform difficult and challenging tasks in a particular field beyond the usual range of achievement of competent persons in that field. An expert is regarded by other persons in the field as an authority or practitioner of unusual competence and skill in a professional, scientific, technical or other activity.

These definitions are located under 5 CFR 304.102. The appointments are made under 5 U.S.C. 3109, and the use of this authority is reported to OPM annually.

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E-GOV INITIATIVES AND BENEFITS

NASA is providing funding contributions in FY 2010 for each of the following E-Government Initiatives:

Initiative	2010 Contributions (Includes In-Kind)	2010 Service Fees
E-Rulemaking 026-00-01-99-04-0060-24		$28,625
Business Gateway 026-00-01-99-04-0100-24	$46,894	
Grants.gov 026-00-01-99-04-0160-24	$517,763	
E-Training 026-00-01-99-04-1217-24		$700,000
Recruitment One-Stop		$120,655
EHRI 026-00-01-99-04-1219-24		$434,234
E-Payroll 026-00-01-99-04-1221-24		$3,704,840
E-Travel 026-00-01-99-04-0220-24		$1,862,465
Integrated Acquisition Environment 026-00-01-99-04-0230-24		$1,273,884
IAE-Loans and Grants 026-00-01-99-04-4300-24	$89,973	
E-Authentication 026-00-01-99-04-0250-24		$7,450
Financial Management LoB 026-00-01-99-04-1100-24	$75,000	
Human Resources Management LoB 026-00-01-99-04-1200-24	$65,217	
Grants Management LoB 026-00-01-99-04-1300-24	$59,316	
Geospatial LoB 026-00-01-99-04-3100-24	$15,000	
Budget Formulation and Execution LoB 026-00-01-99-04-3200-24	**$85,000**	
IT Infrastructure LoB 026-00-01-99-04-3300-24		
NASA Total	**$954,163**	**$8,132,153**

* Service Fees are estimates as provided by the E-Government initiative Managing Partners

NASA's FY 2009 Exhibit 300 IT business cases will be posted at: www.nasa.gov/offices/ocio/reports/exhibit300.html within two weeks of the release of the President's Budget. NASA's Congressional Justification, which will be posted online, will include a link to the Exhibit 300s.

Supporting Data: E-Gov Initiatives and Benefits

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The E-Government initiatives serve citizens, businesses, and federal employees by delivering high quality services more efficiently at a lower price. Instead of expensive "stove-piped" operations, agencies work together to develop common solutions that achieve mission requirements at reduced cost, thereby making resources available for higher priority needs. Benefits realized through the use of these initiatives for NASA in FY 2010 are as follows:

E-Rulemaking (Managing Partner EPA) FY 2010 Benefits

NASA's benefits for the E-Rulemaking initiative are largely focused on public benefits. Providing one-stop access to NASA and other federal agency information on rulemakings and non-rulemaking activities, there are more 1.5 million documents posted on *Regulations.gov*. The rate at which the public uses *Regulations.gov* to submit comments (known as public submissions) is increasing rapidly. The public initially submitted about 1,000 comments per month during the first 18 months of the public site. Now, the public submits nearly 40,000 comments per month. The public has also visited *Regulations.gov* more than 200 million times, averaging 5 million hits per month in 2006, 6.2 million in 2007, and 12.5 million in 2008.

NASA benefits in several ways through its participation and reliance on FDMS and *Regulations.gov*. NASA reaps substantial benefits by improving the transparency of its rulemaking actions as well as increasing public participation in the regulatory process. Direct budget cost savings and cost avoidance result from NASA's transition to FDMS and Regulations.gov, enabling the agency to discontinue efforts to develop, deploy and operate specific individual online docket and public comment systems. Over a five-year period, NASA is estimated to save over 700 thousand dollars over alternative options that would provide similar services.

Business Gateway (Managing Partner SBA) FY 2010 Benefits

For FY2010, Business Gateway will continue to provide a valuable channel for NASA to identify businesses with the interest and expertise to engage in technological development and partnerships. NASA provides a host of programs focused on business from research contracts to Mentor/Protégé programs. Business Gateway provides a powerful outreach channel to match businesses with the various initiatives that are part of NASA's outreach to the business community. By creating a single portal for business information, such as regulatory compliance information Business Gateway directly benefits NASA's stakeholders, including aerospace industry and research labs – many of whom are subject to complex regulatory requirements across multiple agencies.

NASA's stakeholders can potentially receive significant benefits from Business Gateway. These benefits are outlined below. Through increased outreach, more constituents will be able to realize these benefits. The following additional benefit information for NASA (*as of Oct. 27, 2008)* was provided by the Business Gateway initiative, based on calculations from publicly available data and data from the existing Business.gov site. Benefits to NASA include *[NOTE that NASA has not independently verified this data]:*

- Maintenance savings: Business. gov's search technology will provide NASA with valuable user statistics and feedback, enabling it to simplify content management on its business compliance site.
- Cost and time savings: Businesses looking for NASA compliance regulations can save time and money by going to Business.gov. In FY 2008, 74% of Business.gov survey respondents (ACSI) reported saving time at an average of nearly 10 hours per user, totaling 3,960,269 hours; 55% of survey respondents also reported saving money at an average of $753 per user.
- Increased forms management: By making 8 forms available on Forms.gov, NASA saves agency time in forms management, and is expected to produce significant savings in paper and postage. NASA forms were accessed via Forms.gov 4,643 times in FY 2008.

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- Increased exposure: Business.gov houses numerous compliance links providing cross-agency effectiveness to American businesses. In FY 2008, Business.gov directed 87 visits to NASA sites.
- Increased transparency: Business Gateway enables NASA to meet its public service commitment to transparency in government by providing its customers with ready, equal access to information about its compliance requirements.
- Regulatory compliance: The business.gov website enables NASA to comply with the reporting requirement for the Small Business Paperwork Relief Act (SBPRA) and is also consistent with the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), which called on Federal regulatory agencies to publish small business guides that assist small firms in complying with, and answer small businesses' inquiries about Federal regulations.
- Reduced burden on field offices: By directing compliance-related inquiries to Business.gov, agencies with field offices will save training and staff-time dollars.
- Data harmonization: Business Gateway is in a unique position to support data harmonization efforts indirectly through its content partnerships with various government agencies. NASA has the opportunity to identify and realize data harmonization benefits in many areas, such as the protection of cutting-edge technologies.

Grants.gov (Managing Partner HHS) FY 2010 Benefits

The Grants.gov Initiative benefits NASA and its grant programs by providing a single location to publish grant (funding) opportunities and application packages, awarding more than $450 billion by the 26 grant-making agencies and other federal grant-making organizations. Grants.gov achieved tremendous growth during FY 2008 with 202,366 submissions, exceeding the FY 2007 total of 180,861 submissions by 12 percent increase. By providing a single site for the grants community to apply for grants using common forms, processes and systems, it makes the process easier for applicants to apply to multiple agencies.

The Grants.gov Initiative benefits NASA and its grant programs by providing broader exposure to a wider community who could potentially apply for NASA funding. In addition, Grants.gov provides a single site for the grantee community to apply for grants using a standard set of forms, processes and systems giving greater access and ability to apply for Federal funding. Through the use of Grants.gov NASA is able to reduce operating costs associated with online posting and application of grants. Additionally, the Agency is able to improve operational effectiveness through use of Grants.Gov by increasing data accuracy and reducing processing cycle times. In FY 2008, NASA posted 96 funding opportunities and 87 application packages, and received 302 proposals.

E-Training (Managing Partner OPM) FY 2010 Benefits

The E-Training initiative benefits NASA and other Federal workforce by reducing redundancies and achieving economies of scale in the purchase and/or development of e-learning content and in purchase of learning technology infrastructure. In 2006, NASA streamlined its three separate online training systems into one centralized, learning management system, SATERN, a "one-stop" approach offering Web-based access to training and career development resources. This centralized approach will allow NASA to reduce costs through the consolidation of multiple learning systems.

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Through SATERN, employees can view required training, launch online content, view training history, and self-register for courses. In addition, the system allows NASA to identify offices that have not met training requirements, and bring them in line with federal mandates. SATERN also offers employees access to career planning tools, individual development plans, and competency management. Currently SATERN has more than 2,000 online courses and 10,000 online books in its catalog, and recently added new SkillSoft courses covering a wide variety of topics and subject areas such as business, information technology, and engineering. SkillSoft and Books 24x7 are available through SATERN at anytime, so they can be accessed at the employee's convenience at work or at home.

Recruitment One-Stop (Managing Partner OPM) FY 2010 Benefits

Recruitment One-Stop provides state-of-the-art online recruitment services to federal job seekers that include online job posting, intuitive job searching, resume warehousing, online application submission, and automated eligibility and status feedback. USAJOBS provides federal agencies with a unified system to attract and hire highly qualified and talented individuals. Integration with Recruitment One-Stop allows NASA to better attract individuals who can accomplish the Agency's mission. The USAJOBS interface allows job seekers to view and apply for all NASA employment opportunities, as well as those from other federal agencies. On average, USAJOBS.gov has over 250,000 visitors per day (the online portal serviced over 50 million applications during FY 2008) and over 100,000 resumes are created monthly.

NASA adopted the USAJOBS resume as the basic application document for all NASA positions, except for Astronaut positions, with Phase II implementation completed 2005. To date NASA has not identified any specific savings, either in terms of budgeted savings or cost avoidance. Although the Agency believes that implementation of ROS has resulted in significant intangible benefits in terms of providing better vacancy information to applicants, it has not resulted in any specific cost savings to NASA. However, the numerous intangible benefits ROS provides to NASA and other agencies includes:

- Decreasing hiring time for managers;
- Providing an integrated solution to agency applicant assessment systems;
- Providing a cost effective marketing and recruitment tool;
- Realizing cost savings over commercial job posting boards;
- Reducing the delay associated with filling critical agency vacancies; and
- Enhancing competition with the private sector for the best and brightest talent for Federal service.

Enterprise HR Integration (Managing Partner OPM) FY 2010 Benefits

The Enterprise Human Resources Integration (EHRI) initiative transforms Human Resource (HR) processes from paper-based processes to electronic-based processes. EHRI also provides workforce planning, forecasting, and analytical tools. The initiative streamlines employee transfers and enhances retirement processing throughout the Executive Branch. The initiative has also developed a consolidated EHRI data warehouse containing HR data on all Executive Branch civilian employees and a robust set of tools. EHRI also includes the Electronic Employee Record, or eOPF, to provide a consolidated image and data view that digitally documents the employment actions and history of individuals employed by the Federal government. The initiative is achieving cost savings that are recognized on a per folder basis. The total cost avoidance per folder is estimated at $44.23. In FY 2008, EHRI increased the number of folders converted from paper to electronic to more than 999,000.

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Specific EHRI/eOPF benefits to NASA include improved convenience in searching, better security and safety to electronic files, more economical, streamlined business processes, and the ability to have a central repository of OPF records for the Agency. Specific NASA employee benefits include secure online access to OPFs, automatic notification when documents are added, exchange of retirement and HR data across agencies and systems, and the elimination of duplicate and repetitive personnel data in personnel folders. NASA completed its implementation to eOPF in March 2008, and transitioned personnel actions processing to the NASA Shared Service Center (NSSC).

E-Payroll (Managing Partner OPM) FY 2010 Benefits

The E-Payroll Initiative standardizes and consolidates government-wide federal civilian payroll services and processes by simplifying and standardizing human resources (HR)/payroll policies and procedures and better integrating payroll, HR, and finance functions. Prior to beginning the initiative, 26 federal agencies provided payroll services. Four providers were selected to furnish payroll services for the Executive branch. In 2004, the Department of Interior (DOI) began serving as NASA's payroll provider, using their system, the federal Personnel and Payroll System (FPPS), to process NASA's HR and Payroll transactions. The E-Payroll initiative benefits NASA by permitting the Agency to focus on its mission related activities, rather than on administrative payroll functions. Payroll processing costs are reduced through economies of scale and avoiding the cost of duplicative capital system modernization activities. The initiative also promotes standardization of business processes and practices and unified service delivery.

E-Travel (Managing Partner GSA) FY 2010 Benefits

NASA is currently scheduled to complete migration of its travel services to Electronic Data Systems Corporation (EDS), one of the three designated E-Travel service providers, by March 2009. Upon completion of this migration, NASA will be able to provide more efficient and effective travel management services. The benefits include cost savings associated with cross-government purchasing agreements and improved functionality through streamlined travel policies and processes, strict security and privacy controls, and enhanced Agency oversight and audit capabilities. NASA employees also will also benefit through more efficient travel planning, authorization, and reimbursement processes. The Agency remains committed to implementing eTravel and has made a significant investment to support the project. NASA believes that FedTraveler.com will provide significant benefits to the Agency when the system is stable

Integrated Acquisition Environment (Managing Partner GSA) FY 2010 Benefits

The Integrated Acquisition Environment (IAE) initiative is designed to streamline the process of reporting on subcontracting plans and to provide agencies with access to analytical data on subcontracting performance. Use of the IAE common functions and services allows agencies to focus on agency-specific needs such as strategy, operations, and management while leveraging shared services for common functions. Furthermore, use of a government-wide business focused service environment reduces funding and resources for technical services and support for acquisition systems originally housed by individual agencies. Over 7.8 million hours were saved by the contributing agencies in completing over 18 million recorded acquisition business process transactions. Contributing agencies received estimated benefits of $396,480,257 based upon the processes, personnel, roles, steps, and actions involved. Additionally, agencies realized an estimated cost avoidance of $5,649,656 and estimated operational cost savings of $30,820,828.

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Through adoption of the tools and services provided by IAE, NASA improves its ability to make informed and efficient purchasing decisions and allows it to replace manual processes. If NASA were not allowed to use the IAE systems, they would need to build and maintain separate systems to record vendor and contract information, and to post procurement opportunities. Agency purchasing officials would not have access to databases of important information from other agencies on vendor performance and could not use systems to replace paper-based and labor-intensive work efforts.

Integrated Acquisition Environment – Loans & Grants FY 2010 Benefits

The Federal Funding Accountability and Transparency Act of 2006 (FFATA) requires OMB to "ensure the existence and operation of a single searchable website, accessible by the public at no cost to access" that includes information on each Federal award. The law specifically requires a unique identifier for the entity receiving the award and of the parent entity of the recipient, should the entity be owned by another entity. Since contracts (and some grants) already require Data Universal Numbering System (DUNS) numbers, a decision was made to leverage this to cover loans and the remainder of the grants. This will allow those areas to feed information into the FFATA portal. The Integrated Acquisition Environment (IAE) currently has a contract with Dun and Bradstreet (D&B) that has been expanded for this purpose. OMB initiated funding requests for each agency to reimburse IAE for this additional cost.

The FY2010 funding requirements as it relates to the IAE – Loans and Grants funding line supports the FFATA for the relationship with D&B and DUNS support services. In addition to provision of DUNS numbers, D&B is now providing business and linkage data seamlessly, and the business arrangement supports the quality of data by real-time updates. NASA and other agencies will leverage the linkages to corporate organizational rollups based on parental and subsidiary relationships.

E-Authentication (Managing Partner GSA) FY 2010 Benefits

The Presidential E-Government Initiative, E-Authentication, provides trusted and secure standards-based authentication architecture to support Federal E-Government applications and initiatives. This approach provides a uniform process for establishing electronic identity and eliminates the need for each initiative to develop their own solution for the verification of identity and electronic signatures, saving time and money across the Federal Government. E-Authentication's distributed architecture allows citizens and businesses to use non-government issued credentials to conduct transactions with the Federal Government.

The initiative will ultimately benefit NASA by providing E-Authentication expertise, guidance, and documentation, including project planning and reporting templates, to enable NASA to achieve production implementation of E-Authentication for its NASA Account Management System (NAMS) application to include a tie to all of its back-end applications that require authentication. In addition, the E-Authentication Federation allows NASA to use identity credentials issued and managed by organizations within and outside the federal government, thereby relieving NASA of much of the cost of providing its own identity management solutions.

NOTE: Beginning in Q3 FY 2009, the E-Authentication PMO will no longer enter into contractual agreements with agencies to provide credential services and technical support. To help agencies through the restructuring during Q1 FY 2009, GSA will provide transition support, advice, and guidance, including a procurement template and supporting materials to assist agencies in migrating to their own contracts or inter-agency agreements for identity credential services by March 31, 2009. Agencies will still be responsible for complying with the E-Authentication policy requirements outlined in OMB Memorandum M-04-04 and NIST Special Publication 800-63.

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LINE OF BUSINESS

Financial Management LoB (Managing Partners DOE and DOL) FY 2010 Benefits

Federal agencies began implementing the Financial Management Line of Business (FM LoB) initiative in FY 2006 by actively migrating to centers of excellence service providers and initiating solutions to integrate financial data among and between agency business systems. When the FM LoB goals are fully realized, agencies' data will be more timely and accurate for decision-making and there will be improved government-wide stewardship and accounting. More timely and accurate data will result from the standardization and seamless data integration efforts, including the implementation of centralized interfaces between core financial systems and other systems. These efforts will focus on promoting strong internal controls and ensuring the integrity of accounting data. The easy exchange of data between federal agencies will increase federal managers' stewardship abilities.

The FM LoB initiative will ultimately benefit NASA by providing the reference tools and templates needed to assist the Agency in planning and managing migration to a selected center of excellence. The FM LoB has established an Advisory Board to govern the activities and decision-making process for the initiative. NASA's involvement with this board affords them the opportunity to review critical issues impacting their FM systems, voice their unique needs and concerns, and collaboratively offer recommendations and influence decisions on how best to implement the common solution. In the long term, NASA will have the opportunity to play an active role in standardizing core FM business process and data elements. NASA's involvement in this crucial task ensures their needs and requirements are addressed in the target FM LoB enterprise architecture supporting the FM LoB common solution. This work allows NASA to influence the future direction of financial management across the government from both an information technology and business process perspective.

Human Resources Management LoB (Managing Partner OPM) FY 2010 Benefits

Through the HR LoB, OPM is using enterprise architecture (EA)-based principles and best practices, proven through the E-Gov initiatives and Federal Enterprise Architecture (FEA), to identify common solutions for HR business processes and/or technology-based shared HR services to be made available to government agencies. Driven from a business perspective rather than a technology focus, the solutions will address distinct business improvements that enhance government's performance of HR services in support of agency missions delivering services to citizens. The end result of the HR LoB efforts will be to save taxpayer dollars, reduce administrative burdens, and significantly improve HR service delivery.

NASA has entered into a partnership with NBC for the HR LoB initiative, which will enable NBC to take advantage of innovative HR solutions previously developed and currently in use by NASA; these solutions could then be deployed to customer agencies, accomplishing a major step toward deploying a common HR environment aligned with the HR LoB objective. Deployment of existing, modern, effective solutions provides cost advantages to the government, and provides enhanced capabilities to customer agencies well ahead of solutions that require new development.

NASA will ultimately benefit from the HR LoB through its use of best-in-class HR services and systems provided by one of the approved service providers. Through its adoption of an approved service provider, the agency can achieve the benefits of "best-in-class" HR solutions without the costs of developing and maintaining their own HR systems. In addition, employees across the Agency will benefit from improved HR services.

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Grants Management LoB (Managing Partners HHS and NSF) FY 2010 Benefits

The Grants Management Line of Business will ultimately offer the development of a government-wide solution to support end-to-end grants management activities promoting citizen access, customer service, and financial and technical stewardship for the Agency. The end result is intended to be a government-wide streamlined grant making process providing transparency and efficiency in the grant decision-making process. The benefits of GM LoB include increased service to citizens through standardized processes; cost savings for grant-making agencies through use of shared IT infrastructure; a reduction in the number of redundant grants management systems; and improved reporting on government-wide grant activities and results. The GM LoB adopted a "consortia-based" approach to implementation and developed a process for forming consortia and having agencies participate in consortia as members.

In FY07 NASA signed a Memorandum of Understanding (MOU) with its selected consortia partner, NSF. In 2008 NASA implemented NSF's new research-focused initiative, *Research.gov*, improving public access to detailed information about NASA awards. *Research.gov* is a collaborative partnership of Federal research-oriented agencies working together for the ultimate benefit of the research community. The Research Spending and Results Service lets Congress, the general public, and the broader research community easily search and find grant award information for NASA and NSF in one place.

For 2009 and beyond, NASA and NSF are committed to working together to serve the research community and to provide access to information and services for both agencies in one location. NASA news and information is also now available in *Research.gov's* Policy Library and Research Headlines. Moving forward, NASA will continue to collaborate with NSF to explore and implement future *Research.gov* service offerings based on NASA and research community needs.

Geospatial LoB (Managing Partner DOL) FY 2010 Benefits

The Geospatial LoB will better serve the agencies' missions and the Nation's interests developing a more strategic, coordinated, and leveraged approach to producing, maintaining, and using geospatial data and services across the Federal government. Specific goals of the Geospatial LoB include establishing a collaborative governance mechanism, coordinating a government-wide planning and investment strategy, and optimizing and standardizing geospatial data and services.

Contributing agencies and bureaus will receive value from the development of the LoB primarily through improved business performance and cost savings. Enhanced governance processes, improved business planning and investment strategies, and optimization and standardization of geospatial business data and services will produce the following results:

- Collaborative management of geospatial investments will be made more adaptable, proactive and inclusive;
- Enterprise business needs and agency core mission requirements will be identified, planned, budgeted, and exploited in a geospatial context;
- Long-term costs of geo-information delivery and access will be reduced while minimizing duplicative development efforts;
- Effective, yet less costly commercial off the shelf systems and contractual business support operations will replace legacy geospatial applications; and
- Business processes will be optimized and knowledge management capabilities will exist for locating geospatial data and obtaining services.

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As a science agency, the work of NASA's science and mission professionals is inherently different from duties and functions performed by operational agencies. These differences lead NASA to organize and manage data to best facilitate science activities rather than a central focus of data dissemination. Scientific inquiry often leads scientist to use different schemas for analyzing data and information produced from remote sensing data (e.g. a common grid or projection). NASA will continue to apply the elements of FGDC standards where these are appropriate. In FY08, NASA signed an MOU with DOL to continue its active participation in the Geospatial LOB.

Budget Formulation & Execution LOB (Managing Partner Education) FY 2010 Benefits

The Budget Formulation and Execution LoB (BFELoB) provides significant benefits to NASA and other partner agencies by encouraging best practices crossing all aspects of Federal budgeting -- from budget formulation and execution to performance to human capital and staffing needs.

To benefit all agencies, BFELoB, in conjunction with Department of Treasury as the system owner, made available the first shared fee-for-service budget formulation system, the Budget Formulation and Execution Manager (BFEM). The BFELoB is providing ongoing support for this fee-for-service budget system, in an effort to develop an execution module and enhance connections with OMB's MAX system. The BFEM system is an option for NASA and any NASA component that is in need of a budget formulation or performance measurement system. To help agencies assess their budget systems requirements, BFELoB LAO created a decision matrix. NASA will benefit from using this matrix as a starting point in determining specific system needs. In 2010, BFELoB will further benefit agencies by evaluating known budget systems against the decision matrix and making that information available so each agency can avoid the cost of performing that step individually.

In addition, BFELoB created a secure government-only collaboration website, known as the "MAX Federal Community." This provides a significant benefit for collaboration across and within agencies. It is used within the budget community, and has been expanded to serve other related communities, such as Grants, Financial Management, Performance, and Planning. NASA currently has 100 users that are registered and eligible to take advantage of the MAX Federal Community. The Community site is commonly used for sharing information, collaboratively drafting documents, supporting workgroups, and much more.

ITI LoB - IT Infrastructure LOB (Managing Partner GSA) FY 2010 Benefits

The IT Infrastructure LoB offers the potential to identify opportunities for IT infrastructure consolidation and optimization, and the development of government-wide common solutions. This LoB will define specific common performance measures for service levels and costs, identify best practices, and develop guidance for transition plans within agencies and/or across agencies. Consolidation and optimization of IT infrastructure represents a significant opportunity to realize future cost savings by taking a more coordinated approach to spending on commodity IT infrastructure. IT infrastructure consolidation and optimization case studies also demonstrate agencies could improve IT service levels and, when relieved of the burden of managing these non-core functions, can concentrate more on mission priorities and results.

Throughout FY 2010, NASA and other agencies will continue gathering information on baseline performance for Mainframes & Servers Services and Support, and Telecommunications Systems and Support. In addition, information on costs and service levels in End User Systems and Support shall be reported using performance metrics developed by ITI LoB. In FY 2010, NASA and other agencies will report information on costs and service levels in all three infrastructure areas. As these targets continue to be refined, NASA and other agencies will update and make progress towards their 5-year optimization plans reports to meet or exceed agency performance targets.

Supporting Data: E-Gov Initiatives and Benefits

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Based on the objectives and goals of this LoB, NASA believes that there is great potential for numerous benefits from the ITI, both for NASA and for other federal agencies. Some of these benefits are relatively easy to quantify, while others are more indirect and require an extended period of time and some econometric analysis prior to producing an estimate. A few of the anticipated FY 2010 benefits from NASA's viewpoint are: improved performance, enhanced productivity, greater consistency and standardization of infrastructure platforms, aggregate purchasing of infrastructure components, cross-agency integration possibilities, and planned approach to new technology infusion. At this stage of the ITI formulation process, NASA is unable to provide any quantifiable cost savings that may results from these anticipated benefits.

Management and Performance

Management and Performance Overview

The Management and Performance section provides a comprehensive record of the past and planned performance for NASA's programs and projects. This section includes: the key NASA FY 2010 Performance Plan; an update to the FY 2009 Performance Plan based on Congressional budget action; a summary of the cost and schedule performance of NASA's projects with estimated life cycle cost above $250 million; and progress on NASA's performance improvement initiatives.

NASA's planning and performance management processes are an essential part of the Agency's governance and strategic management system. The Agency has an integrated system to: plan strategy and implementation; monitor, assess, and evaluate performance toward commitments; identify issues; gauge programmatic and organizational health; and provide appropriate data and information to NASA decision-makers.

Through its strategic management system, NASA: identifies the Agency's long-term Strategic Goals, multi-year Outcomes, and other key performance measures; develops and implements plans to achieve these Goals; and continuously measures the Agency's progress toward these Goals. NASA managers use performance results as a basis for key investment decisions, and NASA performance data provides a foundation for both programmatic and institutional decision-making processes.

NASA's planning and performance management processes provide data to Agency management via: ongoing monthly and quarterly analysis and reviews; annual assessments in support of budget formulation (for budget guidance and issue identification, analysis, and disposition); annual reporting of performance, management issues, and financial position; periodic, in-depth program or special purpose assessments; and recurring or special assessment reports to internal and external organizations.

NASA's performance system is designed to align with the Agency's internally and externally imposed performance measurement and reporting requirements, tools, and practices, including the Government Performance and Results Act, and Executive Order 13450, Improving Government Program Performance.

This section includes the updated FY 2009 and the FY 2010 performance commitments, the target results for the requested resources. The FY 2010 Annual Performance Plan reflects the new account structure, and provide measures for additional content within the Cross-Agency Support Account. Using independent program assessments, which are listed in the theme and program sections of this document and in this section, NASA commits to improvement actions in response to the findings.

NASA strives to find new ways to use performance information to support decisions concerning strategy and budget. A continued focus for NASA in FY 2009 is to improve the policy, metrics, and analysis processes for life cycle cost and schedule performance monitoring and reporting. The Major Program Annual Reports discussed in this section is one of the reporting tools used to determine how NASA performs this task.

Performance Improvement

NASA's Mission demands high levels of performance from our diverse workforce, whose knowledge, skills, and dedication are the backbone of our achievements. NASA has aligned the Agency's performance systems, organizational structure, policies, and processes to ensure programmatic content, institutional capabilities, and other resources are focused on successfully completing the programs and projects tied to our Strategic Goals. The Agency governance councils have joint responsibility for sustaining this alignment through a set of clear, transparent, and repeatable processes that flow to all organizational elements and levels within the Agency. Aligning the entirety of NASA with our Strategic Goals is essential for organizational effectiveness and efficiency. NASA communicates priorities and directions for all components of the Agency through a planning and decision process based on prior year performance and future year objectives. This annual guidance is the benchmark for other processes, including feedback on internal control needs, risk concerns, and safety and mission assurance issues that ripple through our programmatic and institutional framework, ultimately influencing the allocation of resources for each budget year.

In 2009, we continued strengthening processes, procedures, and structures to integrate Agency-wide risk management activities horizontally and vertically, across and within programs, projects, and mission support organizations, and elevating major, systemic, and cross-cutting risks for Agency solution. The risk assessment results are used to inform Agency-level decisions on strategy, policy, program and mission support formulation and implementation approaches, and budget allocations.

The Agency has continued to improve upon its monthly forum, the Baseline Performance Review, to bring performance information forward for discussion and tracking by NASA's senior leaders. NASA created this forum in 2007 as an integrated review of institutional and program activities to help senior leaders understand inter-related issues that impact performance and program risk. Technical and non-technical cross-cutting issues are highlighted and actions are assigned for resolution. Other review topics include an Agency-level review of finance, safety, workforce, and institutional status, and Center and program performance status. The Baseline Performance Review forum fosters communication across organizational boundaries to address mutual concerns and interests.

In FY 2010, NASA will continue to examine its policies and processes to enhance its performance management system and its use in planning and decision making.

Major Program Annual Report Summary

The 2009 Major Program Annual Report (MPAR) is provided to meet the requirements of section 103 of the National Aeronautics and Space Administration Authorization Act of 2005 (P.L. 109-155; 42 U.S.C. 16613; the Act). The 2009 MPAR consists of this summary along with the 2010 Budget Estimates project pages for the eleven projects included in this year's report.

Updated estimates are provided for six projects baselined in previous MPAR reports: the Solar Dynamics Observatory (SDO), the National Polar-orbiting Operational Environmental Satellite System (NPOESS) Preparatory Project (NPP), the Wide-field Infrared Survey Explorer (WISE), the Stratospheric Observatory for Infrared Astronomy (SOFIA), the Aquarius mission, and the Mars Science Laboratory 2009. An update is also provided to the Glory mission rebaseline report submitted since the 2008 MPAR was prepared.

Two projects, the Fermi Gamma-ray Large Area Space Telescope (GLAST) and Kepler mission, entered operations and are no longer included in these reports. The Herschel space Observatory and the Lunar Reconnaissance Orbiter (LRO) projects are no longer included in MPAR reporting because they are ready for launch (the LRO launch has been delayed due to the delayed launch of the mission preceding it at the launch pad; the Herschel mission is an European Space Agency (ESA) launch).

Four major projects received authority to proceed into development since the 2008 MPAR was prepared: The James Webb Space Telescope (JWST), Gravity Recovery and Interior Laboratory (GRAIL), Radiation Belt Storm Probes (RBSP), and Juno missions. These four projects are baselined in this report.

The Current Year (2009) Development Cost and Schedule Estimates are based on expected cost and schedule at the time of completion. Consistent with previous MPAR reports, the Base Year Development Cost estimates in the MPAR summary table below are adjusted to reflect cost accounting used in the FY 2010 Budget Estimates in order to allow a direct comparison between the MPAR Base Year and Current Year Development Cost estimates. Both Base Year and Current Year costs reflect direct programmatic costs (including labor, procurement, and travel) for all years except FY 2005 and FY 2006, which also reflect small residual indirect costs.

Five projects included in this year's report (SDO, Aquarius, NPP, MSL, and SOFIA) have had schedule growth in excess of six months from their MPAR baseline. The SOFIA delay resulted from re-design of the project schedule to facilitate earlier delivery of science while the project proceeds towards full operational capability. Delayed performance by NASA partners and a crowded launch manifest contribute to three of these five delays. Three of these five projects (NPP, MSL, and SOFIA) have reported cost growth of 15 percent or more from their MPAR baseline.

The Glory baseline has been re-established, as required by the Act when the Development Cost Estimate for a project exceeds 30% of its original baseline. The Current Year Development Cost and Schedule Estimates for the Glory mission reported here reflects problems with the spacecraft computer boards which occurred after the project was re-baselined.

Project	Base Year	Development Cost Est. ($M)		Cost Change (%)	Key Mile-stone	Key Milestone Date		Schedule Change (mths)	Cost Change > 15%	Schedule Change > 6 mo	Factors Contributing to Change	
		Base	2009			Base	2009				Internal	External
SDO	2006	$624	$6782	9%	LRD*	Aug-08	Oct-09	14		x	Initial delay (Aug to Dec) led to loss of launch vehicle commit – late deliveries of avionics boxes and instruments, other technical issues	Extended delay due to lack of launch vehicle availability from ULA
WISE	2007	$192	$198	3%	LRD	Nov-09	Nov-09	-				
Aquarius	2007	$193	$209	8%	LRD	Jul-09	May-10	10		x		10-month slip in spacecraft development reported by international partner CONAE (Argentina)
Glory	2009	$259	$296	14%	LRD	Jun-09	Nov-09	5				APS instrument contract cost growth and schedule delay; Spacecraft Single Board Computer failures
NPP	2006	$593	$725	22%	LRD	Apr-08	Jan-11	33	x	x		Delay and cost increase reflect schedule extension made by the NPOESS IPO as result of VIIRS instrument problems
MSL	2007	$969	$1,631	68%	LRD	Sep-09	Nov-11	26	x	x	Cost and schedule growth due to underestimated complexities; EDL system, acquisition and processing equipment, avionics	
SOFIA	2007	$920	$1,077	17%	FOC	Dec-13	Dec-14	12	x	x	Decision to rebaseline Full Operating Capability (FOC) to later date in order to obtain earlier Initial Operating Capability (IOC) and resulting science	
JWST	2008	$2,581	$2,581	0.0%	LRD	Jun-14	Jun-14	-				
Juno	2008	$742	$742	0.0%	LRD	Aug-11	Aug-11	-				
GRAIL	2008	$427	$427	0.0%	LRD	Sep-11	Sep-11	-				
RBSP	2009	$534	$534	0.0%	LRD	May-12	May-12	-				

*Launch Readiness Date (LRD)

FY 2009 Performance Plan Update Narrative

The enclosed FY 2009 Performance Plan has been updated to reflect reprioritization of Agency Programs and projects as a result of the FY 2008 and FY 2009 Appropriations. The only program area that has changed performance commitments as a result of Congressional redirection is the Innovative Partnerships Program. The APGs eliminated from this program may be found at the end of this plan. This Performance Plan may be updated as a result of Recovery Act funds.

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
Strategic Goal 1	**Fly the Shuttle as safely as possible until its retirement, not later than 2010.**						
Outcome 1.1	**Assure the safety and integrity of the Space Shuttle workforce, systems and processes, while flying the manifest.**			**Green**	**Green**	**Yellow**	**Green**
APG 9SSP1	Achieve zero Type-A (damage to property at least $1 million or death) or Type-B (damage to property at least $250 thousand or permanent disability or hospitalization of three or more persons) mishaps in FY 2009.	Space Shuttle	Space Shuttle Program				
APG 9SSP2	Complete 100% of all mission objectives for all Space Shuttle missions in FY 2009 as specified in the Flight Requirements Document for each mission.	Space Shuttle	Space Shuttle Program				
Outcome 1.2	**By December 31, 2010, retire the Space Shuttle.**			**None**	**None**	**None**	**Green**
APG 9SSP3	A 13 percent reduction in Space Shuttle annual value of Shuttle production contracts for Orbiter, External Tank, Solid Rocket Boosters, Reusable Solid Rocket Motor, Space Shuttle Main Engine and Launch & Landing, while maintaining safe flight.	Space Shuttle	Space Shuttle Program				
APG 9SSP4	Reduce to twenty the number of dedicated Space Shuttle Kennedy Space Center (blocks of) facilities, while maintaining safe flight.	Space Shuttle	Space Shuttle Program				
Strategic Goal 2	**Complete the International Space Station in a manner consistent with NASA's International Partner commitments and the needs of human exploration.**						
Outcome 2.1	**By 2010, complete assembly of the U.S. On-orbit Segment; launch International Partner elements and sparing items required to be launched by the Shuttle; and provide on-orbit resources for research to support U.S. human space exploration.**			**None**	**Green**	**Green**	**Green**
APG 9ISS1	Based on the actual Space Shuttle flight rate, number of remaining Shuttle flights, and the discussions with the International Partners, update the agreed-to ISS assembly sequence and transportation plan as necessary.	International Space Station	International Space Station Program				
APG 9ISS2	Accomplish a minimum of 90% of the on-orbit research objectives as established one month prior to a given increment.	International Space Station	International Space Station Program				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
APG 9ISS3	Per the final configuration agreed to by the International Partners, fly the ISS elements and logistics baselined for FY 2009.	International Space Station	International Space Station Program				
APG 9ISS4	Provide increased ISS capability by assembling the remaining two Japanese Exploration Agency (JAXA) elements, the Exposed Facility (EF) and the Experiment Logistics Module-Exposed Section (ELM-ES), and the NASA EXPRESS Logistics Carriers (ELC) as baselined in FY 2009.	International Space Station	International Space Station Program				
Outcome 2.2	**By 2009, provide the on-orbit capability to support an ISS crew of six crewmembers.**			**None**	**None**	**None**	**Green**
APG 9ISS5	Install and make flight ready the following delivered ISS systems for 6 member crew capability in FY 2009: three crew quarters, Galley, Water Recovery System (WRS racks 1 and 2), second Treadmill with Vibration Isolation (TVIS2), and Waste Collection/Hygiene Compartment.	International Space Station	International Space Station Program				
APG 9ISS6	In concert with the International Partners, assure a continuous crew presence on the ISS.	International Space Station	International Space Station Program				
Outcome 2.3	**Conduct basic and applied biological and physical research to advance and sustain U.S. scientific expertise.**			**None**	**None**	**None**	**New**
APG 9AC1	Deliver 3 out of 4 of the following exploration technology payloads to SOMD for launch to the ISS: Multi-User Droplet Combustion Apparatus, Light Microscopy Module / Constrained Vapor Bubble, Boiling Experiment Facility (BXF), Space Acceleration Measurement System accelerometers for CIR, FIR and BXF.	Advanced Capabilities	Exploration Technology Development				
APG 9AC2	Complete the development of 3 out of 4 of the following non-exploration payloads: Investigating the Structure of Paramagnetic Aggregates from Colloidal Emulsions, Shear History Extensional Rheology Experiment, Advanced Plant Experiments on Orbit, Smoke Point in Coflow Experiment, Binary Critical Aggregation Test - 4.	Advanced Capabilities	Exploration Technology Development				
APG 9AC3	Complete the selection of investigators for the BION (Russian collaboration) flight.	Advanced Capabilities	Exploration Technology Development				
Strategic Goal 3	**Develop a balanced overall program of science, exploration, and aeronautics consistent with the redirection of the human spaceflight program to focus on exploration.**						
Sub Goal 3A.1	**Study Earth from space to advance scientific understanding and meet societal needs.**						
Outcome 3.1	**Progress in understanding and improving predictive capability for changes in the ozone layer, climate forcing, and air quality associated with changes in atmospheric composition.**			**Green**	**Green**	**Green**	**Green**
APG 9ES1	Demonstrate progress in understanding and improving predictive capability for changes in the ozone layer, climate forcing, and air quality associated with changes in atmospheric composition (based on measurements from presently orbiting NASA and non-NASA assets). Progress will be evaluated by external expert review.	Earth Science	Multiple Programs				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
APG 9ES2	Develop missions in support of this Outcome, as demonstrated by completing the Orbiting Carbon Observatory (OCO) Launch Readiness Review (LRR).	Earth Science	Earth System Science Pathfinder				
APG 9ES3	Develop missions in support of this Outcome, as demonstrated by completing the Glory mission Launch Readiness Review (LRR).	Earth Science	Earth Systematic Missions				
APG 9ES4	Develop missions in support of this Outcome, as demonstrated by completing the integration and testing of the Aquarius instrument for delivery to the CONAE (Argentina) satellite observatory.	Earth Science	Earth System Science Pathfinder				
APG 9ES5	Develop mission in support of this Outcome, as demonstrated by completing the CLARREO advanced concepts study.	Earth Science	Earth Systematic Missions				
APG 9ES6	Conduct flight program in support of this Outcome as demonstrated by achieving mission success criteria for Aqua and CALIPSO.	Earth Science	Multiple Programs				
Outcome 3.2	**Progress in enabling improved predictive capability for weather and extreme weather events.**			Green	Green	Green	Green
APG 9ES7	Demonstrate progress in enabling improved predictive capability for weather and extreme weather events. Progress will be evaluated by external expert review.	Earth Science	Multiple Programs				
APG 9ES8	Develop missions in support of this Outcome, as demonstrated by completing the Global Precipitation Mission (GPM) Confirmation Review.	Earth Science	Earth Systematic Missions				
APG 9ES9	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Aqua.	Earth Science	Earth Systematic Missions				
Outcome 3A.3	**Progress in quantifying global land cover change and terrestrial and marine productivity, and in improving carbon cycle and ecosystem models.**			**Green**	**Green**	**Green**	**Green**
APG 9ES10	Demonstrate progress in quantifying global land cover change and terrestrial and marine productivity, and in improving carbon cycle and ecosystem models. Progress will be evaluated by external expert review.	Earth Science	Multiple Programs				
APG 9ES11	Develop missions in support of this Outcome, as demonstrated by completing the Landsat Data Continuity Mission (LDCM) Critical Design Review (CDR).	Earth Science	Earth Systematic Missions				
APG 9ES12	Develop missions in support of this Outcome, as demonstrated by completing the DESDynI advanced concept study.	Earth Science	Earth Systematic Missions				
APG 9ES2	Develop missions in support of this Outcome, as demonstrated by completing the Orbiting Carbon Observatory (OCO) Launch Readiness Review (LRR).	Earth Science	Earth System Science Pathfinder				
APG 9ES9	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Aqua.	Earth Science	Earth Systematic Missions				
Outcome 3A.4	**Progress in quantifying the key reservoirs and fluxes in the global water cycle and in improving models of water cycle change and fresh water availability.**			**Green**	**Green**	**Yellow**	**Green**
APG 9 ES13	Demonstrate progress in quantifying the key reservoirs and fluxes in the global water cycle and in improving models of water cycle change and fresh water availability. Progress will be evaluated by external expert review.	Earth Science	Multiple Programs				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
APG 9ES14	Develop missions in support of this Outcome, as demonstrated by completing the SMAP advanced concepts study.	Earth Science	Earth Systematic Missions				
APG 9ES8	Develop missions in support of this Outcome, as demonstrated by completing the Global Precipitation Mission (GPM) Confirmation Review.	Earth Science	Earth Systematic Missions				
APG 9ES9	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Aqua.	Earth Science	Earth Systematic Missions				
Outcome 3A.5	**Progress in understanding the role of oceans, atmosphere, and ice in the climate system and in improving predictive capability for its future evolution.**			**Green**	**Green**	**Yellow**	**Yellow**
APG 9ES15	Demonstrate progress in understanding the role of oceans, atmosphere, and ice in the climate system and in improving predictive capability for its future evolution. Progress will be evaluated by external expert review.	Earth Science	Multiple Programs				
APG 9ES16	Develop mission in support of this Outcome, as demonstrated by completing the ICESat II advanced concepts study.	Earth Science	Earth Systematic Missions				
APG 9ES2	Develop missions in support of this Outcome, as demonstrated by completing the Orbiting Carbon Observatory (OCO) Launch Readiness Review (LRR).	Earth Science	Earth System Science Pathfinder				
APG 9ES3	Develop missions in support of this Outcome, as demonstrated by completing the Glory mission Launch Readiness Review (LRR).	Earth Science	Earth Systematic Missions				
APG 9ES4	Develop missions in support of this Outcome, as demonstrated by completing the integration and testing of the Aquarius instrument for delivery to the CONAE (Argentina) satellite observatory.	Earth Science	Earth System Science Pathfinder				
APG 9ES6	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Aqua and CALIPSO.	Earth Science	Multiple Programs				
Outcome 3A.6	**Progress in characterizing and understanding Earth surface changes and variability of Earth's gravitational and magnetic fields.**			**None**	**Green**	**Green**	**Green**
APG 9ES11	Develop missions in support of this Outcome, as demonstrated by completing the Landsat Data Continuity Mission (LDCM) Critical Design Review (CDR).	Earth Science	Earth Systematic Missions				
APG 9ES12	Develop missions in support of this Outcome, as demonstrated by completing the DESDynI advanced concept study.	Earth Science	Earth Systematic Missions				
APG 9ES17	Demonstrate progress in characterizing and understanding Earth surface changes and variability of Earth's gravitational and magnetic fields. Progress will be evaluated by external expert review.	Earth Science	Multiple Programs				
APG 9ES9	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Aqua.	Earth Science	Earth Systematic Missions				
Outcome 3A.7	**Progress in expanding and accelerating the realization of societal benefits from Earth system science.**			**Green**	**Green**	**Green**	**Green**
APG 9ES18	Issue twelve reports with partnering organizations that validate using NASA research capabilities (e.g., observations and/or forecast products) could improve their operational decision support systems.	Earth Science	Applied Sciences				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
APG 9ES19	Increase the number of distinct users of NASA data and services.	Earth Science	Earth Science Research				
APG 9ES20	Maintain a high level of customer satisfaction, as measured by exceeding the most recently available federal government average rating of the Customer Satisfaction Index.	Earth Science	Earth Science Research				
Sub Goal 3B	**Understand the Sun and its effects on Earth and the solar system.**						
Outcome 3B.1	**Progress in understanding the fundamental physical processes of the space environment from the Sun to Earth, to other planets, and beyond to the interstellar medium.**			**Green**	**Green**	**Green**	**Green**
APG 9HE1	Demonstrate progress in understanding the fundamental physical processes of the space environment from the Sun to Earth, to other planets, and beyond to the interstellar medium. Progress will be evaluated by external expert review.	Heliophysics	Multiple Programs				
APG 9HE2	Develop missions in support of this Outcome, as demonstrated by completing the Magnetospheric Multiscale (MMS) Spacecraft Preliminary Design Review (PDR).	Heliophysics	Solar Terrestrial Probes				
APG 9HE3	Develop missions in support of this Outcome, as demonstrated by completing the Geospace Radiation Belt Storm Probes Confirmation Review.	Heliophysics	Living with a Star				
APG 9HE4	Develop missions in support of this Outcome, as demonstrated by completing the Explorer down-select.	Heliophysics	Heliophysics Explorer Program				
APG 9HE5	Conduct flight program in support of this outcome, as demonstrated by achieving mission success criteria for STEREO, AIM, THEMIS and IBEX.	Heliophysics	Multiple Programs				
Outcome 3B.2	**Progress in understanding how human society, technological systems, and the habitability of planets are affected by solar variability and planetary magnetic fields.**			**Green**	**Green**	**Green**	**Green**
APG 9HE2	Develop missions in support of this Outcome, as demonstrated by completing the Magnetospheric Multiscale (MMS) Spacecraft Preliminary Design Review (PDR).	Heliophysics	Solar Terrestrial Probes				
APG 9HE3	Develop missions in support of this Outcome, as demonstrated by completing the Geospace Radiation Belt Storm Probes Confirmation Review.	Heliophysics	Living with a Star				
APG 9HE4	Develop missions in support of this Outcome, as demonstrated by completing the Explorer down-select.	Heliophysics	Heliophysics Explorer Program				
APG 9HE6	Demonstrate progress in understanding how human society, technological systems, and the habitability of planets are affected by solar variability and planetary magnetic fields. Progress will be evaluated by external expert review.	Heliophysics	Multiple Programs				
APG 9HE7	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for AIM and THEMIS.	Heliophysics	Multiple Programs				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
Outcome 3B.3	**Progress in developing the capability to predict the extreme and dynamic conditions in space in order to maximize the safety and productivity of human and robotic explorers.**			**None**	**None**	**Green**	**Green**
APG 9HE3	Develop missions in support of this Outcome, as demonstrated by completing the Geospace Radiation Belt Storm Probes Confirmation Review.	Heliophysics	Living with a Star				
APG 9HE8	Demonstrate progress in developing the capability to predict the extreme and dynamic conditions in space in order to maximize the safety and productivity of human and robotic explorers. Progress will be evaluated by external expert review.	Heliophysics	Multiple Programs				
APG 9HE9	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for STEREO.	Heliophysics	Multiple Programs				
Sub Goal 3C	**Advance scientific knowledge of the origin and history of the solar system, the potential for life elsewhere, and the hazards and resources present as humans explore space.**						
Outcome 3C.1	**Progress in learning how the Sun's family of planets and minor bodies originated and evolved.**			**Green**	**Green**	**Green**	**Green**
APG 9PS1	Demonstrate progress in learning how the Sun's family of planets and minor bodies originated and evolved. Progress will be evaluated by external expert review.	Planetary Science	Multiple Programs				
APG 9PS2	Develop missions in support of this Outcome, as demonstrated by completing the Juno Critical Design Review (CDR).	Planetary Science	New Frontiers				
APG 9PS3	Develop missions in support of this Outcome, as demonstrated by completing the GRAIL mission Preliminary Design Review (PDR).	Planetary Science	Discovery				
APG 9PS4	Develop missions in support of this Outcome, as demonstrated by completing the Mars Science Laboratory (MSL) Launch Readiness Review (LRR).	Planetary Science	Mars Exploration				
Outcome 3C.2	**Progress in understanding the processes that determine the history and future of habitability in the solar system, including the origin and evolution of Earth's biosphere and the character and extent of prebiotic chemistry on Mars and other worlds.**			**Green**	**Green**	**Green**	**Green**
APG 9PS2	Develop missions in support of this Outcome, as demonstrated by completing the Juno Critical Design Review (CDR).	Planetary Science	New Frontiers				
APG 9PS4	Develop missions in support of this Outcome, as demonstrated by completing the Mars Science Laboratory (MSL) Launch Readiness Review (LRR).	Planetary Science	Mars Exploration				
APG 9PS5	Demonstrate progress in understanding the processes that determine the history and future of habitability in the solar system, including the origin and evolution of Earth's biosphere and the character and extent of prebiotic chemistry on Mars and other worlds. Progress will be evaluated by external expert review.	Planetary Science	Multiple Programs				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
APG 9PS6	Develop missions in support of this Outcome, as demonstrated by selecting the next Scout mission.	Planetary Science	Mars Exploration				
APG 9PS7	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Phoenix.	Planetary Science	Mars Exploration				
Outcome 3C.3	**Progress in identifying and investigating past or present habitable environments on Mars and other worlds, and determining if there is or ever has been life elsewhere in the solar system.**			**Green**	**Green**	**Green**	**Green**
APG 9PS2	Develop missions in support of this Outcome, as demonstrated by completing the Juno Critical Design Review (CDR).	Planetary Science	New Frontiers				
APG 9PS4	Develop missions in support of this Outcome, as demonstrated by completing the Mars Science Laboratory (MSL) Launch Readiness Review (LRR).	Planetary Science	Mars Exploration				
APG 9PS6	Develop missions in support of this Outcome, as demonstrated by selecting the next Scout mission.	Planetary Science	Mars Exploration				
APG 9PS7	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Phoenix.	Planetary Science	Mars Exploration				
APG 9PS8	Demonstrate progress in identifying and investigating past or present habitable environments on Mars and other worlds, and determining if there is or ever has been life elsewhere in the solar system. Progress will be evaluated by external expert review.	Planetary Science	Multiple Programs				
Outcome 3C.4	**Progress in exploring the space environment to discover potential hazards to humans and to search for resources that would enable human presence.**			**Green**	**Green**	**Green**	**Green**
APG 9PS10	Develop missions in support of this Outcome, as demonstrated by selecting instruments for the first Lunar Science Research mission.	Planetary Science	Planetary Science Research				
APG 9PS4	Develop missions in support of this Outcome, as demonstrated by completing the Mars Science Laboratory (MSL) Launch Readiness Review (LRR).	Planetary Science	Mars Exploration				
APG 9PS7	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Phoenix.	Planetary Science	Mars Exploration				
APG 9PS9	Demonstrate progress in exploring the space environment to discover potential hazards to humans and to search for resources that would enable human presence. Progress will be evaluated by external expert review.	Planetary Science	Multiple Programs				
Sub Goal 3D	**Discover the origin, structure, evolution, and destiny of the universe, and search for Earth-like planets.**						
Outcome 3D.1	**Progress in understanding the origin and destiny of the universe, phenomena near black holes, and the nature of gravity.**			**Green**	**Green**	**Green**	**Green**
APG 9AS1	Demonstrate progress in understanding the origin and destiny of the universe, phenomena near black holes, and the nature of gravity. Progress will be evaluated by external expert review.	Astrophysics	Multiple Programs				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
APG 9AS2	Develop missions in support of this Outcome, as demonstrated by releasing the Joint Dark Energy Mission (JDEM) Announcement of Opportunity (AO).	Astrophysics	Physics of the Cosmos				
Outcome 3D.2	**Progress in understanding how the first stars and galaxies formed, and how they changed over time into the objects recognized in the present universe.**			**Blue**	**Green**	**Yellow**	**Green**
APG 9AS3	Demonstrate progress in understanding how the first stars and galaxies formed, and how they changed over time into the objects we recognize in the present universe. Progress will be evaluated by external expert review.	Astrophysics	Multiple Programs				
APG 9AS4	Develop missions in support of this Outcome, as demonstrated by completing the James Webb Space Telescope (JWST) Integrated Science Instrument Module (ISIM) Critical Design Review (CDR).	Astrophysics	Cosmic Origins				
APG 9AS5	Develop missions in support of this Outcome, as demonstrated by beginning Stratospheric Observatory for Infrared Astronomy (SOFIA) open-door testing.	Astrophysics	Cosmic Origins				
Outcome 3D.3	**Progress in understanding how individual stars form and how those processes ultimately affect the formation of planetary systems.**			**Green**	**Green**	**Yellow**	**Green**
APG 9AS4	Develop missions in support of this Outcome, as demonstrated by completing the James Webb Space Telescope (JWST) Integrated Science Instrument Module (ISIM) Critical Design Review (CDR).	Astrophysics	Cosmic Origins				
APG 9AS5	Develop missions in support of this Outcome, as demonstrated by beginning Stratospheric Observatory for Infrared Astronomy (SOFIA) open-door testing.	Astrophysics	Cosmic Origins				
APG 9AS6	Demonstrate progress in understanding how individual stars form and how those processes ultimately affect the formation of planetary systems. Progress will be evaluated by external expert review.	Astrophysics	Multiple Programs				
Outcome 3D.4	**Progress in creating a census of extra-solar planets and measuring their properties.**			**Green**	**Green**	**Yellow**	**Yellow**
APG 9AS7	Demonstrate progress in creating a census of extra-solar planets and measuring their properties. Progress will be evaluated by external expert review.	Astrophysics	Multiple Programs				
APG 9AS8	Develop missions in support of this Outcome, as demonstrated by completing Kepler Launch Readiness Review (LRR).	Astrophysics	Exoplanet Exploration				
Sub Goal 3E	**Advance knowledge in the fundamental disciplines of aeronautics, and develop technologies for safer aircraft and higher capacity airspace systems.**						
Outcome 3E.1	**By 2016, identify and develop tools, methods, and technologies for improving overall aircraft safety of new and legacy vehicles operating in the Next Generation Air Transportation System (projected for the year 2025).**			**None**	**None**	**Green**	**Green**
APG 9AT1	Demonstrate a 10% improvement in estimation accuracy of integrated gas path sensing and diagnostics for aircraft engine health.	Aeronautics	Aviation Safety				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
APG 9AT2	Conduct a spin test to verify enhanced disk rim attachment strength at component level and show 10% life improvement over criteria established in 2007.	Aeronautics	Aviation Safety				
APG 9AT3	Assess and deliver findings on initial multi-modal presentation formats and interaction methods for uncertainty display concepts and virtual visual environments with statistically significant reductions in communication errors, mental workload, and flight technical error, as well as increases in usability and situation awareness compared with baseline capability.	Aeronautics	Aviation Safety				
APG 9AT4	Design and evaluate preliminary concepts in on-line integrity monitoring (99% failure detection with less than 1% false positives) for adaptive control systems through simulation tests.	Aeronautics	Aviation Safety				
Outcome 3E.2	**By 2016, develop and demonstrate future concepts, capabilities, and technologies that will enable major increases in air traffic management effectiveness, flexibility, and efficiency, while maintaining safety, to meet capacity and mobility requirements of the Next Generation Air Transportation System.**			**None**	**None**	**Green**	**Green**
APG 9AT5	Complete trajectory analysis for service provider-based automated separation assurance with time-based metering with 2-3 times increase in capacity without reduction of baseline metering accuracy or separation violations.	Aeronautics	Airspace Systems				
APG 9AT6	Develop algorithms to generate robust, optimized solutions for surface traffic planning and control. Evaluations will include benefits in both nominal and off-nominal conditions under increased Airportal traffic density and consider environmental constraints and aircraft operator schedule preferences.	Aeronautic	Airspace Systems				
Outcome 3E.3	**By 2016, develop multidisciplinary analysis and design tools and new technologies, enabling better vehicle performance (e.g., efficiency, environmental, civil competitiveness, productivity, and reliability) in multiple flight regimes and within a variety of transportation system architectures.**			**None**	**None**	**Green**	**Green**
APG 9AT10	Complete the CFD pretest predictions of performance and operability of a high Mach fan for a TBCC propulsion system and compare to fan test data from the GRC W8 facility.	Aeronautics	Fundamental Aeronautics				
APG 9AT7	Develop a database for alternative hydrocarbons using accepted testing standards, then characterize the fuels (freezing point, break point, etc) in comparison to current Jet-A.	Aeronautics	Fundamental Aeronautics				
APG 9AT8	Develop and validate transmission tools and technologies to support variable speed drive systems using data from several transmission test cells at GRC.	Aeronautics	Fundamental Aeronautics				
APG 9AT9	Demonstrate an adjoint-based design method for configuration shaping; also establish the capability to design and analyze supersonic vehicles that achieve efficiency improvements within 10% of the defined targets including engine plume effects and verify the results using wind tunnel and flight experiments.	Aeronautics	Fundamental Aeronautics				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
Outcome 3E.4	**Ensure the continuous availability of a portfolio of NASA-owned wind tunnels/ground test facilities, which are strategically important to meeting national aerospace program goals and requirements.**			**None**	**None**	**None**	**Green**
APG 9AT11	To sustain the required aeronautics test facilities force measurement capability for the nation, implement a centralized force balance capability by FY 2009.	Aeronautics	Aeronautics Test Program				
Sub Goal 3F	**Understand the effects of the space environment on human performance, and test new technologies and countermeasures for long-duration human space exploration.**						
Outcome 3F.1	**By 2008, develop and test candidate countermeasures to ensure the health of humans traveling in space.**			**Green**	**Green**	**Green**	**Green**
APG 9AC4	Develop an operational protocol that meets the standards of the Office of the Chief Health and Medical Officer for a countermeasure to lower the risk of renal stone formation due to increased bone loss during long duration missions in microgravity to below 1%.	Advanced Capabilities	Human Research Program				
APG 9AC5	Validate a ground analog fractional-gravity test methodology to assess whether 1/6th g is protective of physiological systems, including bone loss, and if not, what countermeasures are needed.	Advanced Capabilities	Human Research Program				
APG 9AC6	Provide recommendations for optimized EVA suit weight, pressure, center of gravity and kinematics.	Advanced Capabilities	Human Research Program				
Outcome 3F.2	**By 2010, identify and test technologies to reduce total mission resource requirements for life support systems.**			**Green**	**Green**	**Green**	**Green**
APG 9AC7	Evaluate three alternative distillation technologies for primary water processing as part of closed loop water recovery systems.	Advanced Capabilities	Exploration Technology Development				
Outcome 3F.3	**By 2010, develop reliable spacecraft technologies for advanced environmental monitoring and control and fire safety.**			**Green**	**None**	**Green**	**Green**
APG 9AC8	Complete the System Design Review for the Colorimetric Solid Phase Extraction Water Biocide Monitor.	Advanced Capabilities	Exploration Technology Development				
Outcome 3F.4	**By 2012, identify and develop tools, methods, and technologies for assessing, improving and maintaining the overall health of the astronaut corps, for mission lengths up to 180 days in microgravity or 1/6 G.**						
APG 9SFS1	Publish volume 5 of the Spacecraft Maximum Allowable Concentrations (SMACs) and volume 3 of the Spacecraft Water Exposure Guidelines (SWEGs).	Space and Flight Support	Crew Health & Safety				
APG 9SFS2	Thirty-seven percent of current and former astronaut medical requirements data will be captured in a comprehensive medical data management infrastructure.	Space and Flight Support	Crew Health & Safety				
APG 9SFS3	Capture 100% of medical and environmental data required by Medical Operations in queriable form.	Space and Flight Support	Crew Health & Safety				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
Strategic Goal 4	**Bring a new Crew Exploration Vehicle into service as soon as possible after Shuttle retirement.**						
Outcome 4.1	**No later than 2015, and as early as 2010, transport three crewmembers to the International Space Station and return them safely to Earth, demonstrating an operational capability to support human exploration missions.**			**Green**	**Green**	**Green**	**Yellow**
APG 9AC11	Deliver a prototype 5-meter diameter ablative heat shield for Orion to the Constellation Systems Program.	Advanced Capabilities	Exploration Technology Development				
APG 9CS1	Complete the Critical Design Review (CDR) for the Orion / Crew Exploration Vehicle (CEV).	Constellation Systems	Constellation Systems Program				
APG 9CS12	Complete the Preliminary Design Review (PDR) for the Constellation Program flight capability (PDR #1).	Constellation Systems	Constellation Systems Program				
APG 9CS2	Complete the Critical Design Review (CDR) for the Ares I Upper Stage (US) element.	Constellation Systems	Constellation Systems Program				
APG 9CS3	Complete the Critical Design Review (CDR) for the Pad B Launch Complex development within the Ground Operations Project.	Constellation Systems	Constellation Systems Program				
APG 9CS4	Complete the Preliminary Design Review (PDR) of the Mission Control Center System (MCCS) within the Mission Operations Project.	Constellation Systems	Constellation Systems Program				
APG 9CS5	Complete the Preliminary Design Review (PDR) for the Extravehicular Activity (EVA) Space Suit Element for CEV.	Constellation Systems	Constellation Systems Program				
APG 9CS6	Complete the launch and flight analysis of the CEV Pad Abort 1 (PA-1) test.	Constellation Systems	Constellation Systems Program				
APG 9CS7	Complete the launch and flight analysis of the Ares 1-X sub-orbital test.	Constellation Systems	Constellation Systems Program				
APG 9SFS3	In FY 2009, maintain agency rocket propulsion test core competencies (both infrastructure and critical skills) at appropriate levels to meet Constellation testing requirements and integrate these with other NASA programs, commercial partners, and DoD requirements and capabilities.	Space and Flight Support (SFS)	Rocket Propulsion Testing				
APG 9SFS4	Coordinate rocket propulsion test activities to support Constellation rocket propulsion testing milestones by providing an agency level Rocket Propulsion Test Plan.	Space and Flight Support (SFS)	Rocket Propulsion Testing				
Outcome 4.2	**By 2010, successfully transition applicable Shuttle components, infrastructure, and workforce to the Constellation Systems program.**						**New**
APG 9CS8	Demonstrate progress towards the transition of Space Shuttle and Space Station workforce and infrastructure for utilization in Constellation, including the transfer of the Vertical Assembly Building, configuration of Launch Complex 39-B and the Mobile Launch Platform 1 for the Ares 1-X test.	Constellation Systems	Constellation Systems Program				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
Strategic Goal 5	**Encourage the pursuit of appropriate partnerships with the emerging commercial space sector.**						
Outcome 5.1	**Develop and demonstrate a means for NASA to purchase launch services from emerging launch providers.**			**Green**	**Green**	**Green**	**Green**
APG 9SFS5	Establish a contractual mechanism or agreement to provide technical exchanges between NASA's Launch Services Program and emerging launch vehicles/providers to enhance early launch success.	Space and Flight Support (SFS)	Launch Services				
Outcome 5.2	**By 2010, demonstrate one or more commercial space services for ISS cargo and/or crew transport.**			**Green**	**Green**	**Green**	**Green**
APG 9CS10	Have at least three funded and unfunded Partners receiving technical assistance through the COTS Assistance Team (CAT) and making progress toward orbital demonstrations of commercial crew and cargo systems.	Constellation Systems	Constellation Systems Program				
APG 9CS9	Have at least one Partner complete a minimum of one orbital demonstration flight in FY 2009.	Constellation Systems	Constellation Systems Program				
Strategic Goal 6	**Establish a lunar return program having the maximum possible utility for later missions to Mars and other destinations.**						
Outcome 6.1	**By 2008, launch a Lunar Reconnaissance Orbiter (LRO) that will provide information about potential human exploration sites.**			**Green**	**None**	**Green**	**Green**
APG 9AC12	Launch the Lunar Reconnaissance Orbiter. (LRO)	Advanced Capabilities	Lunar Precursor Robotic Program				
APG 9AC13	Launch the Lunar Crater Observation and Sensing Satellite. (LCROSS)	Advanced Capabilities	Lunar Precursor Robotic Program				
Outcome 6.2	**By 2012, develop and test technologies for in situ resource utilization, power generation, and autonomous systems that reduce consumables launched from Earth and moderate mission risk.**			**Green**	**Green**	**Green**	**Green**
APG 9AC14	Demonstrate in field tests a proof-of-concept pressurized rover with EVA suitports that could enable surface exploration beyond the vicinity of the lunar outpost and improve EVA work efficiency.	Advanced Capabilities	Exploration Technology Development				
Outcome 6.3	**By 2013, sufficiently develop and test technologies for nuclear power systems to enable an informed selection of systems for flight development to provide power to a lunar outpost.**			**Green**	**White**	**Green**	**Green**
APG 9AC15	Demonstrate full-scale radiator panels in the laboratory at temperatures and heat transfer rates relevant to the reference 40-kilowatt fission surface power system for the lunar outpost.	Advanced Capabilities	Exploration Technology Development				
Outcome 6.4	**Implement the space communications and navigation architecture responsive to science and exploration mission requirements.**			**Green**	**Green**	**Green**	**Green**
APG 9SFS6	Complete TDRS Replenishment Preliminary Design Review (PDR).	Space and Flight Support	Space Com-munications and Navigation				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
APG 9SFS7	Re-compete the Space Network, Near Earth Network and NISN operations and maintenance contracts to provide uninterrupted support of those networks.	Space and Flight Support	Space Communications and Navigation				
APG 9SFS8	Complete a consolidated network modernization plan for all SCaN networks to meet existing and future science and exploration mission requirements.	Space and Flight Support	Space Communications and Navigation				
Outcome 6.5	**No later than 2020, demonstrate the capability to conduct an extended human expedition to the lunar surface and lay the foundation for extending human presence across the solar system.**						**None**
APG 9AC16	Begin successful science data collection from the Lunar Reconnaissance Orbiter (LRO) in support of human lunar missions.	Advanced Capabilities	Lunar Precursor Robotic Program				
APG 9AC17	Begin successful science data collection from the Lunar Crater Observation and Sensing Satellite (LCROSS) in support of human lunar missions.	Advanced Capabilities	Lunar Precursor Robotic Program				
APG 9CS11	Conduct the Lunar Capabilities SRR to define the lunar mission architecture transportation requirements.	Constellation Systems	Extended Lunar Stay Capability				

Cross-Agency Support Programs

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
Center Management and Operations Theme							
Outcome CMO-1	**Under development for release in 2010.**						**New**
APG 9CMO1	Under development for release in 2010.						
Education Theme							
Outcome ED-1	**Contribute to the development of the Science, Technology, Engineering and Math (STEM) workforce in disciplines needed to achieve NASA's strategic goals, through a portfolio of investments.**			**None**	**Green**	**Green**	**Green**
APG 9ED1	Support the development of 60 new or revised courses targeted at the STEM skills needed by NASA.	Education					
APG 9ED2	Serve 132 institutions in designated EPSCoR states.	Education					
APG 9ED3	Engage 8,500 underrepresented and underserved students in NASA higher education programs.	Education					
APG 9ED4	Increase the percentage of higher education program participants who have participated in NASA elementary or secondary programs by an additional ten percent above the FY 2007 baseline of eighteen percent.	Education					
APG 9ED5	Achieve thirty five percent of student participants in FY 2009 NASA higher education programs, will be employed by NASA, aerospace contractors, universities, and other educational institutions.	Education					
APG 9ED6	Achieve thirty five percent of undergraduate students in FY 2009 NASA higher education programs move on to advanced education in NASA-related disciplines.	Education					
Outcome ED-2	**Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers and faculty.**			**None**	**Green**	**None**	**Green**
APG 9ED10	Achieve fifty percent or greater level of interest in science and technology careers among elementary and secondary students participating in NASA education programs.	Education					
APG 9ED7	Increase the percentage of elementary and secondary educators, who receive NASA content-based STEM resources materials or participate in short-duration activities that use these materials in the classroom by four percent above the FY 2007 baseline of fifty five percent.	Education					
APG 9ED8	Increase the number of elementary and secondary student participants in NASA instructional and enrichment activities by 10% above the FY 2007 baseline of 408,774.	Education					
APG 9ED9	Assure seventy percent of elementary and secondary educators who participate in NASA training programs use NASA resources in their classroom instruction, an increase in the FY 2007 baseline of sixty two percent.	Education					

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
Outcome ED-3	**Build strategic partnerships and linkages between STEM formal and informal education providers that promote STEM literacy and awareness of NASA's mission.**			**None**	**None**	**None**	**Green**
APG 9ED11	Assure that at least 350 museums and science centers across the country actively engage the public through NASA content.	Education					
APG 9ED12	Assure that twenty percent of the 460 museums and science centers that participate in NASA networks, use NASA resources in programs and exhibits.	Education					
Agency Management and Operations Theme							
Outcome IEM-1	**By 2012, implement Agency business systems that provide timely, consistent and reliable business information for management decisions.**			**None**	**None**	**None**	**Green**
APG 9IEM1	Implement all reports into the Human Capital Information Environment and stabilize the project and environment.	Agency Management & Operations	Agency IT Services				
APG 9IEM2	Implement the federal eTravel initiative to provide a standardized, comprehensive tool to support online booking, travel planning, travel expense reimbursement, payment processing, credit card reconciliation, and management reporting for NASA.	Agency Management & Operations	Agency IT Services				
Outcome IEM-2	**Increase efficiency by implementing new business systems and reengineering Agency business processes.**			**None**	**None**	**Green**	**Green**
APG 9IEM3	Reduce the number of quarterly corrective adjustments to financial statements from the 2006 baseline of 5948 steps to the 2009 goal of 2509 steps (a 58% reduction).	Agency Management & Operation	Agency IT Services				
APG 9IEM4	Improve the timeliness of the funds distribution process (time from receipt of apportionment to distribution of funds to Centers) from 65 days to the 2009 goal of 12 days.	Agency Management & Operations	Agency IT Services				
APG 9IEM5	Achieve cost savings, expected to increase annually with a 2009 goal of $19.3M, resulting from the integration of financial and asset management systems, a reduction in the number of redundant property, plant and equipment (PP&E) systems and process improvements that enable NASA to better manage PP&E assets.	Agency Management & Operations	Agency IT Services				
Outcome IPP-1	**Promote and develop innovative technology partnerships among NASA, U.S. industry, and other sectors for the benefit of Agency programs and projects.**			**Blue**	**Green**	**Green**	**Green**
APG 9IPP1	Develop twelve technology-related significant partnerships that create value for NASA's programs and projects. Track both quantitative dollar value and qualitative benefits to NASA (e.g. reduced volume or mass, improved safety).	Agency Management & Operations	Innovative Partnerships Program				
APG 9IPP2	Complete thirty technology transfer agreements with the commercial and academic community through such mechanisms as licenses, software use agreements, facility use agreements, and Space Act Agreements.	Agency Management & Operations	Innovative Partnerships Program				

FY 2009 Performance Plan Update

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
APG 9IPP3	Fully implement a new system for managing NASA's technology transfer and partnership information, that is more user friendly and less costly than the current NASA Technology Transfer System (NTTS).	Agency Management & Operations	Innovative Partnerships Program				
APG 9IPP4	Infuse technologies from the IPP portfolio into NASA's programs and projects, with at least twelve documented infusion successes.	Agency Management & Operations	Innovative Partnerships Program				
Outcome SC-1	**Establish and maintain selected Agency level shared capabilities, across multiple classes of assets (e.g., wind tunnels, vacuum chambers, etc.), to ensure that they will continue to be available to support the missions that require them.**			**None**	**None**	**None**	**Green**
APG 9SC1	Prioritize funding requirements and select classes of assets for inclusion in the Shared Capability Assets Program.	Agency Management & Operations	Strategic Capabilities Assets Program				
APG 9SC2	Identify re-investment/re-capitalization opportunities within and among classes of assets and execute the approved changes (e.g., reallocate funds, upgrade facilities, etc.).	Agency Management & Operations	Strategic Capabilities Assets Program				
SPG 9SC3	Assets identified in FY 2008 that no longer have requirements for use by NASA will be dispositioned (decision made on whether to place on standby, be mothballed, be demolished, etc.).	Agency Management & Operations	Strategic Capabilities Assets Program				
Institutional Investments Theme							
Outcome IINV-1	**Under development for release in 2010.**						**New**
APG 9IINV1	Under development for release in 2010.						

Uniform and Efficiency Measures

Measure	Description
Advanced Capabilities Theme	
APG 9AC18	Complete all development projects within 110% of the cost and schedule baseline.
APG 9AC19	Increase the amount of research beam time for space radiation experiments at NSRL, hence science data collection, by reducing the non-science overhead to 25% from 33% for set up, tuning and maintenance.
APG 9AC20	Given an annual constant dollar technology funding, demonstrate improvements in the EVA Work Efficiency Index for humans and robots working cooperatively to deploy the power system infrastructure for the lunar outpost. Work Efficiency Index = (Time to complete a task using humans and robots) / (Time to complete a task using humans only).
Astrophysics Theme	
APG 9AS12	Complete all development projects within 110% of the cost and schedule baseline.
APG 9AS13	Deliver at least 90% of scheduled operating hours for all operations and research facilities.
APG 9AS14	Peer-review and competitively award at least 95%, by budget, of research projects.
APG 9AS15	Reduce time within which 80% of NRA research grants are awarded, from proposal due date to selection, by 5% per year, with a goal of 130 days.
Aeronautics Theme	
APG 9AT12	Deliver at least 94% of "on-time availability" for all operations and research facilities.
Constellation Systems Theme	
APG 9CS12	Complete all development projects within 110% of the cost and schedule baseline.
APG 9CS13	Reduction in ground operations cost (through 2012) of the Constellation Systems based on comparison with the Space Shuttle Program.
Education Theme	
APG 9ED13	Reduce the dollar invested per number of people reached via e-education technologies from FY 2008 amounts.
APG 9ES14	Reduce the cost per K-12 program participant over FY 2007 amounts by 1%.
Earth Science Theme	
APG 9ES21	Complete all development projects within 110% of the cost and schedule baseline.
APG 9ES22	Deliver at least 90% of scheduled operating hours for all operations and research facilities.
APG 9ES23	Peer-review and competitively award at least 90%, by budget, of research projects.
APG 9ES24	Reduce time within which eighty percent of NRA research grants are awarded, from proposal due date to selection, by five percent per year, with a goal of 130 days.

Uniform and Efficiency Measures

Measure	Description
Heliophysics Theme	
APG 9HE10	Complete all development projects within 110% of the cost and schedule baseline.
APG 9HE11	Deliver at least 90% of scheduled operating hours for all operations and research facilities.
APG 9HE12	Peer-review and competitively award at least 95%, by budget, of research projects.
APG 9HE13	Reduce time within which eighty percent of NRA research grants are awarded, from proposal due date to selection, by five percent per year, with a goal of 130 days.
Agency Management and Operations Theme	
APG 9IEM8	Complete all development projects within 110% of the cost and schedule baseline.
APG 9IEM9	Reduce the number of financial processing steps/time to perform year end closing from the 2005 baseline of 120 steps to the 2008 goal of 20 steps (an 83% reduction).
APG 9IPP7	For technology partnerships, leverage IPP funding by bringing at least an additional $1.80 (one dollar and eighty cents) for each $1 (one dollar) of IPP funds.
International Space Station Theme	
APG 9ISS7	Achieve an Annual Cost Performance Index (CPI), the ratio of the value of the work accomplished versus the actual cost of the work accomplished, of greater than or equal to one.
APG 9ISS8	Deliver at least 90% of scheduled operating hours for all operations and research facilities.
Planetary Science Theme	
APG 9PS11	Complete all development projects within 110% of the cost and schedule baseline.
APG 9PS12	Deliver at least 90% of scheduled operating hours for all operations and research facilities.
APG 9PS13	Peer-review and competitively award at least 95%, by budget, of research projects.
APG 9PS14	Reduce time within which eighty percent of NRA research grants are awarded, from proposal due date to selection, by five percent per year, with a goal of 130 days.
Space and Flight Support (SFS) Theme	
APG 9SFS10	Achieve at least 99% Space Network proficiency for delivery of Space Communications services.
APG 9SFS11	Complete all development projects within 110% of the cost and schedule baseline.
APG 9SFS12	Ratio of Launch Services program cost per mission to average spacecraft cost, reduced to 6.3 percent.
Space Shuttle Theme	
APG 9SSP5	Annually reduce the Space Shuttle sustaining engineering workforce for flight hardware and software, while maintaining safe flight.
APG 9SSP6	Deliver at least 90% of scheduled operating hours for all operations and research facilities.

Annual Performance Goals Eliminated for FY 2009

Measures	Description	Contributing Theme	Contributing Program(s)
APG 9IPP05	Demonstrate the purchase of services from the emerging commercial space sector for microgravity research and training.	Agency Management and Operations	Agency Management and Operations
APG 9IPP06	Demonstrate benefits of prize competitions by awarding at least one prize and communicating the resulting technology advancements.	Agency Management and Operations	Agency Management and Operations

FY 2010 Performance Plan Narrative

NASA's six Strategic Goals are reflected below. Each is clearly defined and supported by Sub-goals (where appropriate), and supported by multi-year Outcomes. The majority of NASA's long-term performance commitments, the Outcomes, have remained the same from FY 2009. These in turn are supported by annual performance goals (APGs) that enhance NASA's ability to measure and report the Agency's progress in achieving its Strategic Goals.

The FY 2010 Performance Plan adds outcomes and APGs that support the Agency Management & Operations (AM&O), Center Management & Operations (CM&O), and Institutional Investments (II) themes established in FY 2009 under the "Cross-Agency Support (CAS)" Appropriation Account.

To better communicate the contribution of these themes along with other mission support elements, the performance measures were structured as function-based, rather than theme-based, Outcomes. Elements involving management of facilities, infrastructure, and information technology continue from FY 2009, but under more strategic Outcome statements. With the development of more strategic Outcomes, activities such as the Shared Capabilities Assets Program no longer provide APGs at the Agency level, but maintain measures used within the AM&O Program. New Outcomes were also established for human capital management, safety and mission assurance, and for launch services and space communications (a Space Operations Appropriations Account element formerly distributed between Strategic Goals 3, 4, 5, and 6). Each of these Outcomes provides "cross agency" support to programs and projects across NASA Mission Directorates, they are listed under the banner of Agency Support.

The Innovative Partnership Program Outcomes and APGs are now all aligned to Strategic Goal 5 to support partnership activities.

The table below provides a summary of all of the Agency commitments identified in the preceding sections. The table also reflects trend information for the Outcomes. Definitions for the trend ratings are as follows:

Outcomes
Green: NASA achieved most APGs under this Outcome and is on-track to achieve or exceed this Outcome.
Yellow: NASA made significant progress toward this Outcome, however, the Agency may not achieve this Outcome as stated.
Red: NASA failed to achieve most of the APGs under this Outcome and does not expect to achieve this Outcome as stated.
White: This Outcome was cancelled by management directive or is no longer applicable based on management changes to the APGs.
None: The stated Outcome did not exist in the years indicated.

FY 2010 Performance Plan

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
Strategic Goal 1	**Fly the Shuttle as safely as possible until its retirement, not later than 2010.**						
Outcome 1.1	**Assure the safety and integrity of the Space Shuttle workforce, systems and processes, while flying the manifest.**			**Green**	**Yellow**	**Green**	**Green**
APG 10SSP1	Achieve zero Type-A (damage to property at least $1 million or death) or Type-B (damage to property at least $250 thousand or permanent disability or hospitalization of three or more persons) mishaps in FY 2010.	Space Shuttle	Space Shuttle Program				
APG 10SSP2	Complete 100% of all mission objectives for all Space Shuttle missions in FY 2010 as specified in the Flight Requirements Document for each mission.	Space Shuttle	Space Shuttle Program				
Outcome 1.2	**By December 31, 2010, retire the Space Shuttle.**			**None**	**None**	**Green**	**Green**
APG 10SSP03	Complete close-out and transfer plans for all remaining Space Shuttle flight hardware elements and other major Space Shuttle property assets, including the disposition plans for the Orbiters and the means by which significant gaps in human spaceflight operations capabilities will be managed until the first operational flight of the Constellation Program.	Space Shuttle	Space Shuttle Program				
APG 10SSP04	Complete 100% of the Transition Property Assessment for Space Shuttle Program property by no later than the second quarter of FY 2010.	Space Shuttle	Space Shuttle Program				
APG 10SSP05	With the Constellation Program, complete and deliver 2 workforce transition strategy report updates to Congress in FY 2010.	Space Shuttle	Space Shuttle Program				
Strategic Goal 2	**Complete the International Space Station in a manner consistent with NASA's International Partner commitments and the needs of human exploration.**						
Outcome 2.1	**By 2010, complete assembly of the U.S. On-orbit Segment; launch International Partner elements and sparing items required to be launched by the Shuttle; and provide on-orbit resources for research to support U.S. human space exploration.**			**Green**	**Green**	**Green**	**Green**
APG 10ISS01	Based on the actual Space Shuttle flight rate, number of remaining Shuttle flights, and the discussions with the International Partners, update the agreed-to ISS assembly sequence and transportation plan as necessary.	International Space Station	International Space Station Program				
APG 10ISS02	Accomplish a minimum of 90% of the on-orbit research objectives as established one month prior to a given increment.	International Space Station	International Space Station Program				
APG 10ISS03	Per the final configuration agreed to by the International Partners, fly the ISS elements and logistics baselined for FY 2010.	International Space Station	International Space Station Program				
APG 10ISS04	Provide increased ISS capability and utilization by integrating ISS elements, payloads, and spares including the EXPRESS Logistics Carriers 1 through 4, Cupola, Node 3, Multipurpose Pressurized Logistics Module, a COTS demonstration, and Mini-Research Module.	International Space Station	International Space Station Program				

FY 2010 Performance Plan

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
Outcome 2.2	**Through 2015, provide the on-orbit capability to support an ISS crew of 6 crewmembers.**			**None**	**None**	**Green**	**Green**
APG 10ISS05	Achieve zero Type-A (damage to property at least $1 million or death) or Type-B (damage to property at least $250 thousand or permanent disability or hospitalization of 3 or more persons) mishaps in FY 2010.	International Space Station	International Space Station Program				
APG 10ISS07	In concert with the International Partners, maintain a continuous crew presence on the ISS by coordinating and managing resources, logistics, systems, and operational procedures.	International Space Station	International Space Station Program				
APG 10ISS08	Deliver 100% of planned on-orbit resources (including power, data, crew time, logistics, and accommodations) available to support research.	International Space Station	International Space Station Program				
Outcome 2.3	**Conduct basic and applied biological and physical research to advance and sustain U.S. scientific expertise.**			**None**	**None**	**New**	**Green**
APG 10AC01	Deliver 2 out of 3 of the following exploration technology payloads to SOMD for launch to the ISS: 1) Boiling Experiment Facility; 2) Capillary Channel Flow, or several test vessels of the Capillary Flow Experiment-2; or 3) Conduct the tests for the Flame Extinguishment Experiment exploration payload on ISS.	Advanced Capabilities	Exploration Technology Development				
APG 10AC02	Conduct 3 out of 4 of the following non-exploration experiments on the ISS: 1) Dynamical Selection of Interface Patterns; 2) Two samples from Microstructure Formation in Castings of Technical Alloys under Diffusive and Magnetically-Controlled Convective Conditions (MICAST)/Columnar-Equiaxed Transition in Solidification Processing experiment; 3) Binary Critical Aggregation Test-5; or 4) Investigating the Structures of Paramagnetic Aggregates from Colloidal Emulsions-3.	Advanced Capabilities	Exploration Technology Development				
APG 10AC03	Develop for flight two ISS/Shuttle/Free Flyer payloads: Develop the Animal Enclosure Module for launch on the Space Shuttle, to conduct immunology research on rodents; and develop a nano-satellite as a secondary Free Flyer payload to conduct fundamental biological research.	Advanced Capabilities	Exploration Technology Development				

FY 2010 Performance Plan

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
Strategic Goal 3	**Develop a balanced overall program of science, exploration, and aeronautics consistent with the redirection of the human spaceflight program to focus on exploration.**						
Strategic Goal 3A	**Study Earth from space to advance scientific understanding and meet societal needs.**						
Outcome 3A.1	**Progress in understanding and improving predictive capability for changes in the ozone layer, climate forcing, and air quality associated with changes in atmospheric composition.**			**None**	**Green**	**Green**	**Green**
APG 10ES01	Demonstrate progress in understanding and improving predictive capability for changes in the ozone layer, climate forcing, and air quality associated with changes in atmospheric composition (based on measurements from presently orbiting NASA and non-NASA assets). Progress will be evaluated by external expert review.	Earth Science	Multiple Programs				
APG 10ES02	Develop missions in support of this Outcome, as demonstrated by completing Aquarius Operational Readiness Review (ORR).	Earth Science	Earth System Science Pathfinder				
APG 10ES03	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Aura.	Earth Science	Earth Systematic Missions				
Outcome 3A.2	**Progress in enabling improved predictive capability for weather and extreme weather events.**			**None**	**Green**	**Green**	**Green**
APG 10ES04	Demonstrate progress in enabling improved predictive capability for weather and extreme weather events. Progress will be evaluated by external expert review.	Earth Science	Multiple Programs				
APG 10ES05	Develop missions in support of this Outcome, as demonstrated by completing the NPOESS Preparatory Project (NPP) Operational Readiness Review (ORR).	Earth Science	Earth Systematic Missions				
APG 10ES06	Develop missions in support of this Outcome, as demonstrated by completing the Global Precipitation Mission (GPM) Critical Design Review (CDR).	Earth Science	Earth Systematic Missions				
Outcome 3A.3	**Progress in quantifying global land cover change and terrestrial and marine productivity, and in improving carbon cycle and ecosystem models.**			**None**	**Green**	**Green**	**Green**
APG 10ES07	Demonstrate progress in quantifying global land cover change and terrestrial and marine productivity, and in improving carbon cycle and ecosystem models. Progress will be evaluated by external expert review.	Earth Science	Multiple Programs				
APG 10ES05	Develop missions in support of this Outcome, as demonstrated by completing the NPOESS Preparatory Project (NPP) Operational Readiness Review (ORR).	Earth Science	Earth Systematic Missions				
APG 10ES08	Develop missions in support of this Outcome, as demonstrated by completing the Landsat Data Continuity Mission (LDCM) Confirmation Review.	Earth Science	Earth Systematic Missions				

FY 2010 Performance Plan

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
Outcome 3A.4	**Progress in quantifying the key reservoirs and fluxes in the global water cycle and in improving models of water cycle change and fresh water availability.**			**None**	**Yellow**	**Green**	**Green**
APG 10ES09	Demonstrate progress in quantifying the key reservoirs and fluxes in the global water cycle and in improving models of water cycle change and fresh water availability. Progress will be evaluated by external expert review.	Earth Science	Multiple Programs				
APG 10ES02	Develop missions in support of this Outcome, as demonstrated by completing Aquarius Operational Readiness Review (ORR).	Earth Science	Earth System Science Pathfinder				
APG 10ES06	Develop missions in support of this Outcome, as demonstrated by completing the Global Precipitation Mission (GPM) Critical Design Review (CDR).	Earth Science	Earth Systematic Missions				
APG 10ES10	Develop missions in support of this Outcome, as demonstrated by completing the SMAP Preliminary Design Review (PDR).	Earth Science	Earth Systematic Missions				
Outcome 3A.5	**Progress in understanding the role of oceans, atmosphere, and ice in the climate system and in improving predictive capability for its future evolution.**			**None**	**Yellow**	**Yellow**	**Yellow**
APG 10ES11	Demonstrate progress in understanding the role of oceans, atmosphere, and ice in the climate system and in improving predictive capability for its future evolution. Progress will be evaluated by external expert review.	Earth Science	Multiple Programs				
APG 10ES05	Develop missions in support of this Outcome, as demonstrated by completing the NPOESS Preparatory Project (NPP) Operational Readiness Review (ORR).	Earth Science	Earth Systematic Missions				
APG 10ES12	Develop missions in support of this Outcome, as demonstrated by completing the ICESat-II Initial Confirmation Review.	Earth Science	Earth System Science Pathfinder				
APG 10ES03	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Aura.	Earth Science	Earth Systematic Missions				
Outcome 3A.6	**Progress in characterizing and understanding Earth surface changes and variability of Earth's gravitational and magnetic fields.**			**None**	**Green**	**Green**	**Green**
APG 10ES08	Develop missions in support of this Outcome, as demonstrated by completing the Landsat Data Continuity Mission (LDCM) Confirmation Review.	Earth Science	Earth Systematic Missions				
APG 10ES13	Demonstrate progress in characterizing and understanding Earth surface changes and variability of Earth's gravitational and magnetic fields. Progress will be evaluated by external expert review.	Earth Science	Multiple Programs				

FY 2010 Performance Plan

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
Outcome 3A.7	**Progress in expanding and accelerating the realization of societal benefits from Earth system science.**			**None**	**Green**	**Green**	**Green**
APG 10ES14	Issue 12 reports with partnering organizations that validate using NASA research capabilities (e.g., observations and/or forecast products) could improve their operational decision support systems.	Earth Science	Applied Sciences				
APG 10ES15	Increase the number of distinct users of NASA data and services.	Earth Science	Earth Science Research				
APG 10ES16	Maintain a high level of customer satisfaction, as measured by exceeding the most recently available federal government average rating of the Customer Satisfaction Index.	Earth Science	Earth Science Research				
Strategic Goal 3B	**Understand the Sun and its effects on Earth and the solar system.**						
Outcome 3B.1	**Progress in understanding the fundamental physical processes of the space environment from the Sun to Earth, to other planets, and beyond to the interstellar medium.**			**Green**	**Green**	**Green**	**Green**
APG 10HE01	Demonstrate progress in understanding the fundamental physical processes of the space environment from the Sun to Earth, to other planets, and beyond to the interstellar medium. Progress will be evaluated by external expert review.	Heliophysics	Multiple Programs				
APG 10HE02	Develop missions in support of this Outcome, as demonstrated by completing the Magnetospheric Multiscale (MMS) spacecraft Critical Design Review (CDR).	Heliophysics	Solar Terrestrial Probes				
APG 10HE03	Develop missions in support of this Outcome, as demonstrated by completing the Geospace Radiation Belt Storm Probes Critical Design Review (CDR).	Heliophysics	Living with a Star				
APG 10HE04	Develop missions in support of this Outcome, as demonstrated by awarding Solar Probe instrument contracts.	Heliophysics	Heliophysics Explorer Program				
APG 10HE05	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Hinode (Solar-B), THEMIS, and IBEX.	Heliophysics	Multiple Programs				
Outcome 3B.2	**Progress in understanding how human society, technological systems, and the habitability of planets are affected by solar variability and planetary magnetic fields.**			**Green**	**Green**	**Green**	**Green**
APG 10HE02	Develop missions in support of this Outcome, as demonstrated by completing the Magnetospheric Multiscale (MMS) spacecraft Critical Design Review (CDR).	Heliophysics	Solar Terrestrial Probes				
APG 10HE03	Develop missions in support of this Outcome, as demonstrated by completing the Geospace Radiation Belt Storm Probes Critical Design Review (CDR).	Heliophysics	Living with a Star				

FY 2010 Performance Plan

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
APG 10HE04	Develop missions in support of this Outcome, as demonstrated by awarding Solar Probe instrument contracts.	Heliophysics	Heliophysics Explorer Program				
APG 10HE06	Demonstrate progress in understanding how human society, technological systems, and the habitability of planets are affected by solar variability and planetary magnetic fields. Progress will be evaluated by external expert review.	Heliophysics	Multiple Programs				
APG 10HE07	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for THEMIS.	Heliophysics	Multiple Programs				
Outcome 3B.3	**Progress in developing the capability to predict the extreme and dynamic conditions in space in order to maximize the safety and productivity of human and robotic explorers.**			**Green**	**Green**	**Green**	**Green**
APG 10HE03	Develop missions in support of this Outcome, as demonstrated by completing the Geospace Radiation Belt Storm Probes Critical Design Review (CDR).	Heliophysics	Living with a Star				
APG 10HE08	Demonstrate progress in developing the capability to predict the extreme and dynamic conditions in space in order to maximize the safety and productivity of human and robotic explorers. Progress will be evaluated by external expert review.	Heliophysics	Multiple Programs				
Strategic Goal 3C	**Advance scientific knowledge of the origin and history of the solar system, the potential for life elsewhere, and the hazards and resources present as humans explore space.**						
Outcome 3C.1	**Progress in learning how the Sun's family of planets and minor bodies originated and evolved.**			**Green**	**Green**	**Green**	**Green**
APG 10PS01	Demonstrate progress in learning how the Sun's family of planets and minor bodies originated and evolved. Progress will be evaluated by external expert review.	Planetary Science	Multiple Programs				
APG 10PS02	Develop missions in support of this Outcome, as demonstrated by completing the Juno Systems Integration Review (SIR).	Planetary Science	New Frontiers				
APG 10PS03	Develop missions in support of this Outcome, as demonstrated by completing the GRAIL Critical Design Review (CDR).	Planetary Science	Discovery				
APG 10PS04	Develop missions in support of this Outcome, as demonstrated by selecting New Frontiers 3 concept studies.	Planetary Science	New Frontiers				
APG 10PS05	Develop missions in support of this Outcome, as demonstrated by selecting Discovery 12 concept studies.	Planetary Science	Discovery				
APG 10PS06	Develop missions in support of this Outcome, as demonstration by completing the Mars Science Laboratory flight hardware builds and flight system assemblies.	Planetary Science	Mars Exploration				

FY 2010 Performance Plan

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
Outcome 3C.2	**Progress in understanding the processes that determine the history and future of habitability in the solar system, including the origin and evolution of Earth's biosphere and the character and extent of prebiotic chemistry on Mars and other worlds.**			**Green**	**Green**	**Green**	**Green**
APG 10PS02	Develop missions in support of this Outcome, as demonstrated by completing the Juno Systems Integration Review (SIR).	Planetary Science	New Frontiers				
APG 10PS07	Demonstrate progress in understanding the processes that determine the history and future of habitability in the solar system, including the origin and evolution of Earth's biosphere and the character and extent of prebiotic chemistry on Mars and other worlds. Progress will be evaluated by external expert review.	Planetary Science	Mars Exploration				
APG 10PS08	Develop missions in support of this Outcome, as demonstrated by completing the Mars Atmosphere and Volatile Evolution Mission (MAVEN) Preliminary Design Review (PDR).	Planetary Science					
APG 10PS06	Develop missions in support of this Outcome, as demonstration by completing the Mars Science Laboratory flight hardware builds and flight system assemblies.	Planetary Science	Mars Exploration				
Outcome 3C.3	**Progress in identifying and investigating past or present habitable environments on Mars and other worlds, and determining if there is or ever has been life elsewhere in the solar system.**			**Green**	**Green**	**Green**	**Green**
APG 10PS02	Develop missions in support of this Outcome, as demonstrated by completing the Juno Systems Integration Review (SIR).	Planetary Science	New Frontiers				
APG 10PS06	Develop missions in support of this Outcome, as demonstration by completing the Mars Science Laboratory flight hardware builds and flight system assemblies.	Planetary Science	Mars Exploration				
APG 10PS07	Develop missions in support of this Outcome, as demonstrated by completing the Mars Atmosphere and Volatile Evolution Mission (MAVEN) Preliminary Design Review (PDR).	Planetary Science	Mars Exploration				
APG 10PS09	Demonstrate progress in identifying and investigating past or present habitable environments on Mars and other worlds, and determining if there is or ever has been life elsewhere in the solar system. Progress will be evaluated by external expert review.	Planetary Science	Multiple Programs				
Outcome 3C.4	**Progress in exploring the space environment to discover potential hazards to humans and to search for resources that would enable human presence.**			**Green**	**Green**	**Green**	**Green**
APG 10PS11	Develop missions in support of this Outcome, as demonstrated by completing the LADEE Critical Design Review (CDR).	Planetary Science	Lunar Quest				

FY 2010 Performance Plan

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
APG 10PS10	Demonstrate progress in exploring the space environment to discover potential hazards to humans and to search for resources that would enable human presence. Progress will be evaluated by external expert review.	Planetary Science	Multiple Programs				
APG 10PS06	Develop missions in support of this Outcome, as demonstration by completing the Mars Science Laboratory flight hardware builds and flight system assemblies.	Planetary Science	Mars Exploration				
Strategic Goal 3D	**Discover the origin, structure, evolution, and destiny of the universe, and search for Earth-like planets.**						
Outcome 3D.1	**Progress in understanding the origin and destiny of the universe, phenomena near black holes, and the nature of gravity.**			**Green**	**Green**	**Green**	**Green**
APG 10AS01	Demonstrate progress in understanding the origin and destiny of the universe, phenomena near black holes, and the nature of gravity. Progress will be evaluated by external expert review.	Astrophysics	Multiple Programs				
APG 10AS02	Develop missions in support of this Outcome, as demonstrated by completing the NuSTAR Critical Design Review (CDR).	Astrophysics	Astrophysics Explorer				
APG 10AS03	Develop missions in support of this Outcome, as demonstrated by selecting Joint Dark Energy Mission (JDEM) science investigations.	Astrophysics	Beyond Einstein				
APG 10AS04	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for GLAST.	Astrophysics	Gamma-ray Large Space Telescope				
Outcome 3D.2	**Progress in understanding how the first stars and galaxies formed, and how they changed over time into the objects recognized in the present universe.**			**Green**	**Yellow**	**Green**	**Green**
APG 10AS05	Demonstrate progress in understanding how the first stars and galaxies formed, and how they changed over time into the objects we recognize in the present universe. Progress will be evaluated by external expert review.	Astrophysics	Multiple Programs				
APG 10AS06	Develop missions in support of this Outcome, as demonstrated by completing the James Webb Space Telescope (JWST) Optical Telescope Element Critical Design Review (CDR).	Astrophysics	James Webb Space Telescope				
APG 10AS07	Develop missions in support of this Outcome, as demonstrated by completing the first competed Early Science observations on the Stratospheric Observatory for Infrared Astronomy (SOFIA).	Astrophysics	Stratospheric Observatory for Infrared Astronomy				
APG 10AS08	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for WISE.	Astrophysics	Cosmic Origins				

FY 2010 Performance Plan

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
Outcome 3D.3	**Progress in understanding how individual stars form and how those processes ultimately affect the formation of planetary systems.**			**Green**	**Yellow**	**Green**	**Green**
APG 10AS06	Develop missions in support of this Outcome, as demonstrated by completing the James Webb Space Telescope (JWST) Optical Telescope Element Critical Design Review (CDR).	Astrophysics	James Webb Space Telescope				
APG 10AS07	Develop missions in support of this Outcome, as demonstrated by completing the first competed Early Science observations on the Stratospheric Observatory for Infrared Astronomy (SOFIA).	Astrophysics	Stratospheric Observatory for Infrared Astronomy				
APG 10AS09	Demonstrate progress in understanding how individual stars form and how those processes ultimately affect the formation of planetary systems. Progress will be evaluated by external expert review.	Astrophysics	Multiple Programs				
Outcome 3D.4	**Progress in creating a census of extra-solar planets and measuring their properties.**			**Green**	**Yellow**	**Yellow**	**Green**
APG 10AS10	Demonstrate progress in creating a census of extra-solar planets and measuring their properties. Progress will be evaluated by external expert review.	Astrophysics	Multiple Programs				
Strategic Goal 3E	**Advance knowledge in the fundamental disciplines of aeronautics, and develop technologies for safer aircraft and higher capacity airspace systems.**						
Outcome 3E.1	**By 2016, identify and develop tools, methods, and technologies for improving overall aircraft safety of new and legacy vehicles operating in the Next Generation Air Transportation System (projected for the year 2025).**			**None**	**Green**	**Green**	**Green**
APG 10AT01	Using 2008 as a baseline, demonstrate, on a representative current generation electro-mechanical system test bed, improved IVHM via Bayesian methods and/or models for varying operating conditions and demonstrate fault detection/diagnosis on at least three faults types and examine tradeoff between accuracy and diagnosis time.	Aeronautics	Aviation Safety				
APG 10AT02	Develop an atomistically-based model capable of predicting within 25%, the degradation caused by environmental effects on interfaces in selected polymer matrix composite materials.	Aeronautics	Aviation Safety				
APG 10AT03	Deliver and validate through analysis flight deck guidelines, information, and display requirements that meet NextGen operational needs as established in 2007 baseline assessment, and without a measurable increase to safety risk.	Aeronautics	Aviation Safety				
APG 10AT04	Develop a tool suite that provides an order of magnitude reduction in analysis time over current Monte-Carlo simulation methods that would be used to locate failure points in the flight envelope for a chosen adaptive control system and a set of adverse events.	Aeronautics	Aviation Safety				

FY 2010 Performance Plan

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
Outcome 3E.2	**By 2016, develop and demonstrate future concepts, capabilities, and technologies that will enable major increases in air traffic management effectiveness, flexibility, and efficiency, while maintaining safety, to meet capacity and mobility requirements of the Next Generation Air Transportation System.**			**None**	**Green**	**Green**	**Green**
APG 10AT05	Conduct simulations of automated separation assurance with sequencing, spacing, and scheduling constraints.	Aeronautics	Airspace Systems				
APG 10AT06	Determine the feasibility and benefits of one or more candidate Multi-Sector Planner concepts.	Aeronautics	Airspace Systems				
Outcome 3E.3	**By 2016, develop multidisciplinary analysis and design tools and new technologies, enabling better vehicle performance (e.g., efficiency, environmental, civil competitiveness, productivity, and reliability) in multiple flight regimes and within a variety of transportation system architectures.**			**None**	**Green**	**Green**	**Green**
APG 10AT07	Complete new suite of integrated multidisciplinary analysis tools to predict noise, NOx, takeoff/landing performance, cruise performance, and Take-Off Gross Weight (TOGW) for conventional ("tube and wing") aircraft and unconventional aircraft (e.g. hybrid wind-body).	Aeronautics	Fundamental Aeronautics				
APG 10AT08	Demonstrate control concepts through flight simulation that would contribute towards development of a flight control optimization tool for variable speed engine and transmission with no negative handling quality effects.	Aeronautics	Fundamental Aeronautics				
APG 10AT09	Develop computational models to predict integrated inlet and fan performance and operability and compare models to experimental data.	Aeronautics	Fundamental Aeronautics				
APG 10AT10	Complete CFD predictions of ramjet-to-scramjet mode-transition and compare to wind tunnel and/or X-51 flight test data.	Aeronautics	Fundamental Aeronautics				
Outcome 3E.4	**Ensure the continuous availability of a portfolio of NASA-owned wind tunnels/ground test facilities, which are strategically important to meeting national aerospace program goals and requirements.**			**None**	**None**	**None**	**Green**
APG 10AT11	Achieve test customer evaluation ratings averaging greater than 90% for overall quality and timeliness of ATP facility operations, based on feedback received in post-test customer surveys.	Aeronautics	Aeronautics Test Program				
Outcome 3E.5	**For vehicle and propulsion technologies that simultaneously reduce fuel burn, noise, and emissions, by 2016 develop a well-informed trade space, document performance potential, and identify technical risks to a level that enables incorporation of the technologies into the design of new aircraft.**						
APG 10AT12	In FY 2010, award a contract to conduct N+2 vehicle systems-studies.	Aeronautics	Integrated Systems Research Program				

FY 2010 Performance Plan

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
Strategic Goal 3F	**Understand the effects of the space environment on human performance, and test new technologies and countermeasures for long-duration human space exploration.**						
Outcome 3F.1	**By 2016, develop and test candidate countermeasures to ensure the health of humans traveling in space.**			**None**	**Green**	**Green**	**Green**
APG 10AC04	Deliver a Human Interface Design Handbook for use in designing exploration vehicles.	Advanced Capabilities	Human Research Program				
APG 10AC05	Deliver and publish an initial version of the acute radiation risk projection model for lunar missions.	Advanced Capabilities	Human Research Program				
APG 10AC06	Deliver a device for launch to ISS to test the technology of producing medical grade water on a spacecraft.	Advanced Capabilities	Human Research Program				
APG 10AC07	Complete the assessment study of a capability to test bone & muscle countermeasures in simulated lunar gravity.	Advanced Capabilities	Human Research Program				
APG 10AC08	Complete the 2010 quantitative assessment of the uncertainties in cancer risk projections for space radiation exposures in support of lunar exploration missions.	Advanced Capabilities	Human Research Program				
Outcome 3F.2	**By 2012, identify and test technologies to reduce total mission resource requirements for life support systems.**			**Green**	**Green**	**Green**	**Green**
APG 10AC09	As part of technology development for closed-loop air revitalization for lunar surface habitats, conduct a trade study to evaluate candidate technologies for carbon dioxide reduction in support of down selection for development of a breadboard unit.	Advanced Capabilities	Exploration Technology Development				
APG 10AC10	Develop and test candidate technologies for production of high-pressure gases for potential use for recharge of oxygen for Extra Vehicular Activity (EVA) portable life support systems for planetary surface missions.	Advanced Capabilities	Exploration Technology Development				
Outcome 3F.3	**By 2012, develop reliable spacecraft technologies for advanced environmental monitoring and control and fire safety.**			**None**	**Green**	**Green**	**Green**
APG 10AC11	Demonstrate 6 months of experimental operation of the Electronic Nose (ENose) on orbit.	Advanced Capabilities	Exploration Technology Development				
APG 10AC12	Demonstrate 1 year of experimental operation of the Vehicle Cabin Atmosphere Monitoring (VCAM) system on orbit.	Advanced Capabilities	Exploration Technology Development				
Outcome 3F.4	**By 2012, identify and develop tools, methods, and technologies for assessing, improving and maintaining the overall health of the astronaut corps, for mission lengths up to 180 days in microgravity or 1/6 G.**						
APG 10SFS01	Capture 43% of current and former astronaut medical requirements data will be captured in a comprehensive medical data management infrastructure.	Space & Flight Support	Crew Health & Safety				

FY 2010 Performance Plan

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
APG 10SFS02	Create a set of clinical practice guidelines for monitoring known risks associated with space flight.	Space & Flight Support	Crew Health & Safety				
APG 10SFS03	Capture 100% of medical and environmental data required by Medical Operations in a form capable of queries.	Space & Flight Support	Crew Health & Safety				
APG 10SFS04	Create an integrated concept of operations to use ultrasound for ground-based clinical care as a test bed for in flight uses.	Space & Flight Support	Crew Health & Safety				
Strategic Goal 4	**Bring a new Crew Exploration Vehicle into service as soon as possible after Shuttle retirement.**						
Outcome 4.1	**No later than 2015, transport three crewmembers to the International Space Station and return them safely to Earth, demonstrating an operational capability to support human exploration missions.**			**Green**	**Green**	**Yellow**	**Yellow**
APG 10CS01	Complete Pad Abort-1 test for the Orion Crew Exploration Vehicle.	Constellation Systems	Constellation (Cx) Systems Program				
APG 10CS02	Complete the integrated Preliminary Design Review (PDR) for the Constellation Program.	Constellation Systems	Cx Systems Program				
APG 10CS03	Complete Ares 1 First Stage Development Motor (DM 1) test firing.	Constellation Systems	Cx Systems Program				
APG 10CS04	Complete the Thrust Oscillation Preliminary Design Review (PDR) for Ares I.	Constellation Systems	Cx Systems Program				
APG 10CS05	Complete the Preliminary Design Review (PDR) for the Ground Operations (GO) Project.	Constellation Systems	Cx Systems Program				
APG 10CS06	Complete the Preliminary Design Review (PDR) for the Mission Operations (MO) Project.	Constellation Systems	Cx Systems Program				
Strategic Goal 5	**Encourage the pursuit of appropriate partnerships with the emerging commercial space sector.**						
Outcome 5.1	**Develop and demonstrate a means for NASA to purchase launch services from emerging launch providers.**			**Green**	**Green**	**Green**	**Green**
APG 10SFS05	The Launch Service Program will capture 100% of significant technical interchange information with emerging launch providers as provided under existing contract mechanisms. The Engineering Review Board Information System (ERBIS) will be used to capture specific technical recommendations and opportunities for risk reduction.	Space & Flight Support	Launch Services				
Outcome 5.2	**By 2010, demonstrate one or more commercial space capabilities for ISS cargo and/or crew transport.**			**Green**	**Green**	**Green**	**Green**
APG 10CS07	In FY 2010, have at least one partner demonstrate flight proximity operations with ISS.	Constellation Systems	Cx Systems Program				
APG 10CS08	By the end of FY 2010, conduct one or more demonstration flights to, and berth with, the ISS.	Constellation Systems	Cx Systems Program				

FY 2010 Performance Plan

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
Outcome 5.3	**Promote and develop innovative technology partnerships among NASA, U.S. industry, and other sectors for the benefit of Agency programs and projects.**			**Green**	**Green**	**Green**	**Green**
APG 10IPP01	Document 40 notable technology transfer successes documented in NASA's Spinoff publication.	Agency Management & Operations (AMO)	Innovative Partnerships Program (IPP)				
APG 10IPP02	Produce 1100 New Technology Reports (NTRs) produced, representing the new technologies available for potential transfer.	AMO	IPP				
APG 10IPP03	Ratio of total number of licenses generated from the Intellectual Property (IP) portfolio of patents from the last five years relative to the number of patents in that portfolio is equivalent to 40%.	AMO	IPP				
APG 10IPP04	Initiate or expand 29 SBIR/STTR Phase III contracts.	AMO	IPP				
APG 10IPP05	Achieve 175 technology readiness level (TRL) advancements from the Innovative Partnerships Program portfolio of technology development.	AMO	IPP				
APG 10IPP06	Infuse 68 technologies into NASA programs/projects from total Innovative Partnerships Program portfolio.	AMO	IPP				
APG 10IPP07	Ratio of SBIR/STTR technologies successfully infused into NASA programs/projects relative to the prior five years of SBIR/STTR Phase II contracts issued is equivalent to 21%.	AMO	IPP				
Strategic Goal 6	**Establish a lunar return program having the maximum possible utility for later missions to Mars and other destinations.**						
Outcome 6.1	**By 2012, complete the transition of applicable Shuttle components, infrastructure, and workforce to the Constellation Systems program.**						
APG 10CS09	Complete the Exploration Requirements for Institutional Capabilities (ERIC) database update and develop a coordinated final SOMD/ESMD report that incorporates the ERIC update with the Space Shuttle Program's final assessment of real property.	Constellation Systems	Cx Systems Program				
APG 10CS10	Complete the Constellation Assessment of Personal Property (CAPP) for Space Shuttle Program property.	Constellation Systems	Cx Systems Program				
APG 10CS11	With the Space Shuttle Program, complete and deliver 2 agency workforce transition strategy report updates to Congress.	Constellation Systems	Cx Systems Program				
Outcome 6.2	**By 2016, develop and test technologies for in situ resource utilization, power generation, and autonomous systems that reduce consumables launched from Earth and moderate mission risk.**			**Green**	**Green**	**Green**	**Green**
APG 10AC13	Demonstrate autonomous hazard avoidance system for Altair lunar lander in helicopter flight test.	Advanced Capabilities	Exploration Technology Development				

FY 2010 Performance Plan

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
Outcome 6.3	**By 2013, sufficiently develop and test technologies for nuclear power systems to enable an informed selection of systems for flight development to provide power to a lunar outpost.**			**None**	**None**	**None**	**Green**
APG 10AC14	Liquid-metal pump Demonstration – Complete final report of performance testing of a prototypic annular linear induction pump with sodium-potassium fluid at operating temperatures and flow rates that are relevant to a future 40 kilowatt fission surface power system.	Advanced Capabilities	Exploration Technology Development				
Outcome 6.4	**No later than 2020, demonstrate the capability to conduct an extended human expedition to the lunar surface and lay the foundation for extending human presence across the solar system.**					**None**	**Green**
APG 10CS12	Conduct the Lunar Capabilities SRR to define the lunar mission architecture requirements.	Constellation Systems	Cx Systems Program				
APG 10AC15	Develop concepts for manufacturing 10-meter diameter composite structures for the Ares V launch vehicle.	Advanced Capabilities	Lunar Precursor Robotic Program (LPRP)				
APG 10AC16	Test prototype main engine for Altair lunar lander ascent stage using liquid oxygen and liquid methane propellants.	Advanced Capabilities	LPRP				
APG 10AC17	Complete LRO's primary mission and deposit 50% of the data to the Planetary Data System.	Advanced Capabilities	LPRP				
APG 10AC18	Complete the Lunar Crater Observation and Sensing Satellite (LCROSS) mission.	Advanced Capabilities	LPRP				
APG 10DIO01	Conduct at least 3 multilateral workshops with international space agencies to discuss the potential for international participation in the exploration of the lunar surface.	Constellation Systems	Cx Systems Program				
APG 10OER01	Facilitate the exchange of at least 10 letters between the NASA Administrator and his/her international space agency counterparts, introducing the Administrator and outlining his/her vision for international cooperation.	AMO	Agency Management				

FY 2010 Performance Plan

Measure	Description	Contributing Theme(s)	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
	EDUCATION						
Outcome ED.1	**Contribute to the development of the Science, Technology, Engineering and Math (STEM) workforce in disciplines needed to achieve NASA's Strategic Goals, through a portfolio of investments.**			**Green**	**Green**	**Green**	**Green**
APG 10ED01	Support the development of 60 new or revised courses targeted at the STEM skills needed by NASA.	Education	Education Program				
APG 10ED02	Serve 200 institutions in designated EPSCoR states.	Education	Education Program				
APG 10ED03	Serve 8,500 under-represented and under-served students in NASA higher education programs.	Education	Education Program				
APG 10ED04	Achieve 60% employment of student participants in FY 2009 NASA higher education programs by NASA, aerospace contractors, universities, and other educational institutions.	Education	Education Program				
APG 10ED05	Achieve 45% pursuit of advanced education in NASA-related disciplines of undergraduate students in FY 2009 NASA higher education programs	Education	Education Program				
APG 10WF11	Provide equal opportunity (EO) onsite assessment and technical assistance to three STEM programs receiving NASA funding, and EO technical assistance to an additional 25 NASA-funded STEM programs.	AMO	Agency Management				
Outcome ED.2	**Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers and faculty.**						**Green**
APG 10ED06	Achieve 50% or greater level of interest in science, technology, engineering and math (STEM) careers among elementary and secondary students participating in NASA education programs.	Education	Education Program				
APG 10ED07	Increase to 60% the percentage of elementary and secondary educators who either obtain NASA content-based education resources or participate in short-duration NASA education activities, and use NASA resources in their classroom instruction (a 1% annual increase above the FY 2007 baseline of 55%).	Education	Education Program				
APG 10ED08	Increase to 470,000 the number of elementary and secondary student participants in NASA instruction and enrichment activities (a 5% annual increase above the FY 2007 baseline of 408,774).	Education	Education Program				
APG 10ED09	Assure, in FY 2010, 75% of elementary and secondary educators who participate in NASA training programs use NASA resources in their classroom instruction, an annual increase of 5% in the FY 2007 baseline of 62%.	Education	Education Program				

FY 2010 Performance Plan

Measure	Description	Contributing Theme(s)	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
Outcome ED.3	**Build strategic partnerships and linkages between STEM formal and informal education providers that promote STEM literacy and awareness of NASA's mission.**			**Green**	**None**	**Green**	**Green**
10ED10	Assure that at least 350 museums and space centers across the country actively engage the public through NASA content.	Education	Education Program				
	AGENCY SUPPORT (Contributions from Cross Agency Support (CAS) and Programmatic Appropriation Accounts)						
Outcome AS.1	**Develop, implement, and maintain modern, secure, and high-quality information technology systems and infrastructure to achieve agency mission objectives with the lowest life-cycle cost and least risk.**						
APG 10IT01	Complete migration to the NASA Consolidated Active Directory.	AMO; Center Management & Operations (CMO)	Agency IT Services (AITS)				
APG 10IT02	Complete Operational Readiness Review (ORR) for the NASA Communications Initiative.	AMO; CMO	AITS				
APG 10IT03	Complete integration of Personal Identity Verification (PIV) cards with the desktop.	AMO; CMO	AITS				
APG 10IT04	Complete planned capacity increase to the NASA Wide Area Network.	AMO; CMO	AITS				
APG 10IT05	Complete planned upgrades to networks at Ames Research Center, Glenn Research Center, Goddard Space Flight Center, Kennedy Space Center, Marshall Space Flight Center, and Stennis Space Center.	AMO; CMO	AITS				
APG 10IT06	Complete Operational Readiness Review (ORR) for the NASA Security Operations Center.	AMO; CMO	AITS				
APG 10IT07	By 2010, increase reutilizations of accountable personal property by 2% from the baseline of 5%.	AMO; CMO	AITS				
APG 10IT08	In FY 2010, increase the percentage of total travel bookings completed on-line to at least 60% (baseline is 1.8%).	AMO; CMO	AITS				
APG 10IT09	In FY 2010, increase the total number of solicitations developed in PRISM to at least 80%.	AMO; CMO	AITS				
APG 10IT10	Reduce runtimes of the most heavily accessed Business Warehouse reports by at least 40%.	AMO; CMO	AITS				
Outcome AS.2	**Develop and align workforce strategies, programs, policies and processes to be consistent with the Agency's mission.**						
APG 10WF01	Complete all FY 2010 planned actions for the FY 2008-FY 2010 NASA Model EEO Agency Plan.	AMO; CMO	Agency Management				
APG 10WF02	Complete development of the Agency strategy for deployment of a diversity and inclusion framework.	AMO; CMO	Agency Management				
APG 10WF03	Complete implementation of a certification program to ensure that Program and Project Managers meet Federal Acquisition Certification Requirements before or within one year of assuming leadership of major acquisition projects.	AMO; CMO	Safety & Mission Success (SMS)				

FY 2010 Performance Plan

Measure	Description	Contributing Theme(s)	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
APG 10WF04	Complete full roll-out of the new mid-level leadership development program, targeted at the GS13 through GS15 levels, to ensure continued development of a cadre of potential future NASA leaders and support succession management efforts.	AMO; CMO	Agency Management				
APG 10WF05	Engage with the Mission Directorates, Centers and Mission Support offices in the development of a 5-year workforce plan, matching workforce capabilities with mission needs. Eliminate unassigned civil service workforce in all years of the planning horizon.	AMO; CMO	Agency Management				
APG 10WF06	By March 2010, complete Phase 4 of Shuttle Transition workforce mapping to identify final detailed Shuttle workforce composition and disposition issues and any required actions.	AMO; CMO	Agency Management				
Outcome AS. 3	**Ensure the strategic availability and maintenance of facilities which are necessary to meet the long-term needs and requirements of the Agency.**						
APG 10FAC01	Assure that at least 50% of the NASA Centers have updated their Master Plans to implement Agency Strategic Direction from the Facilities Program Board.	Institutional Investments; AMO; CMO	Agency Management				
APG 10FAC02	Perform a test case review of one of the Agency's major technical portfolios to determine consolidations and/or investments.	AMO; CMO; Strategic Capabilities Assets Program	Agency Management				
APG 10FAC03	Conduct a facility requirements review for the Altair Project requirements through qualification testing.	AMO; CMO	Agency Management				
Outcome AS.4	**While promoting mission success, protect the public, NASA workforce, high-value equipment and property from potential harm as a result of NASA activities and operations by factoring safety, quality, risk, reliability and maintainability as integral features of programs, projects, technologies, operations, and facilities.**						
APG 10SMS01	No fatalities or permanent disabling injuries to the public resulting from NASA activities during fiscal year.	AMO; CMO	SMS				
APG 10SMS02	No fatalities or permanent disabling injuries to the NASA workforce resulting from NASA activities during fiscal year.	AMO; CMO	SMS				
APG 10SMS03	Reduce damage to NASA assets by 10% per fiscal year.	AMO; CMO	SMS				
APG 10SMS04	Maximize achievement of mission success criteria for all NASA programs/projects in the fiscal year.	AMO; CMO	SMS				

FY 2010 Performance Plan

Measure	Description	Contributing Theme(s)	Contributing Program(s)	Multi-year Outcome ratings FY 05	FY 06	FY 07	FY 08
Outcome AS.5	**Implement the space communications and navigation architecture and provide space launch capabilities responsive to existing and future science and space exploration mission requirements.**						
APG 10SFS06	Complete the assessment of Array Antenna size in support of the long term plans for the 70 meter antenna decommissioning and replacement.	Space & Flight Support	Space Communications & Navigation (SCaN)				
APG 10SFS07	Complete TDRS K/L Project Mission Operations Review (MOR).	Space & Flight Support	SCaN				
APG 10SFS08	Complete SN Ground Segment Sustainment project (SGSS) Mission Definition Review (MDR).	Space & Flight Support	SCaN				
APG 10SFS09	Identify agency rocket propulsion test core capabilities (both infrastructure and critical skills) and maintain them at appropriate levels to be able to meet NASA's current and future rocket testing requirements, and deliver an integrated agency-level Rocket Propulsion Test Plan that spans the next ten years and includes DoD and commercial partner requirements and capabilities, as appropriate.	Space & Flight Support	Rocket Propulsion Testing				
APG 10SFS10	Maintain or acquire launch services capabilities (both infrastructure and skills) at levels needed to meet NASA's current and future launch services requirements efficiently and effectively.	Space & Flight Support	Rocket Propulsion Testing				
APG 10SFS11	Complete 100% of Launch Service objectives for all NASA-managed expendable launches in FY 2010 as specified in the Interface Control Document for each mission.	Space & Flight Support	Rocket Propulsion Testing				

FY 2010 Performance Plan
Uniform and Efficiency Measures

Measure	Description
Advanced Capabilities Theme	
APG 10AC13	Complete all development projects within 110% of the cost and schedule baseline.
APG 10AC14	Demonstrate improvements in the EVA Work Efficiency Index for astronauts using a small, pressurized rover with suit-ports compared to astronauts using an unpressurized rover. Work efficiency index=(time to complete a task)/(total time to prepare for EVA).
Aeronautics Theme	
APG 10AT13	Deliver at least 96% of "on-time availability" for all operations and research facilities.
Agency Management & Operations Theme	
APG 10IT11	Complete all development projects within 110% of the cost and schedule baseline.
APG 10IT12	In 2010, reduce the amount of system execution time during the year end close process by six hours.
APG 10IT13	Deliver at least 90% of scheduled operating hours for all operations.
APG 10WF07	Using the Agency's Staffing and Recruitment System, NASA STARS, complete hiring actions–from date of vacancy announcement closing to the time an offer is made–within 45 days.
APG 10IPP08	Achieve a number of technology commercialization success from SBIR/STTR Phase II contracts through FY 2010 to equal 21% of the total number of SBIR/STTR contracts issued over the prior 5 years, including FY 2010.
Astrophysics Theme	
APG 10AS11	Complete all development projects within 110% of the cost and schedule baseline.
APG 10AS12	Deliver at least 90% of scheduled operating hours for all operations and research facilities.
APG 10AS13	Peer-review and competitively award at least 95%, by budget, of research projects.
APG 10AS14	Reduce time within which 80% of NRA research grants are awarded, from proposal due date to selection, by 5% per year, with a goal of 130 days.
Constellation Systems Theme	
APG 10CS13	Complete all development projects within 110% of the cost and schedule baseline.
APG 10CS14	Total annual cost of Constellation operations activities for the first full year after full operational capability, will be no greater than 70% of comparable annual shuttle operations costs (reference year FY 2007).
Earth Science Theme	
APG 10ES17	Complete all development projects within 110% of the cost and schedule baseline.
APG 10ES18	Deliver at least 90% of scheduled operating hours for all operations and research facilities.
APG 10ES19	Peer-review and competitively award at least 90%, by budget, of research projects.
APG 10ES20	Reduce time within which 80% of NRA research grants are awarded, from proposal due date to selection, by 5% per year, with a goal of 227 days.
Education Theme	
APG 10ED11	Reduce the dollar invested per number of page views for the NASA Education website.
APG 10ED12	Reduce the cost per elementary and secondary school program participant over FY 2009 amounts by 2%.
Heliophysics Theme	
APG 10HE09	Complete all development projects within 110% of the cost and schedule baseline.
APG 10HE12	Reduce time within which 80% of NRA research grants are awarded, from proposal due date to selection, by 5% per year, with a goal of 130 days.

FY 2010 Performance Plan
Uniform and Efficiency Measures

Measure	Description
International Space Station Theme	
APG 10ISS09	Deliver at least 90% of scheduled operating hours for all operations and research facilities.
Planetary Science Theme	
APG 10PS11	Complete all development projects within 110% of the cost and schedule baseline.
APG 10PS12	Deliver at least 90% of scheduled operating hours for all operations and research facilities.
APG 10PS13	Peer-review and competitively award at least 95%, by budget, of research projects.
APG 10PS14	Reduce time within which 80% of NRA research grants are awarded, from proposal due date to selection, by 5% per year, with a goal of 130 days.
Space and Flight Support Theme	
APG 10SFS12	Achieve at least 99% Space Network proficiency for delivery of Space Communications services.
APG 10SFS13	Complete all development projects within 110% of the cost and schedule baseline.
APG 10SFS14	Ratio of Launch Services program cost per mission to average spacecraft cost, reduced to 6.2%.
Space Shuttle Theme	
APG 10SSP06	Deliver at least 90% of scheduled operating hours for all operations and research facilities.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION PROPOSED APPROPRIATION LANGUAGE

SCIENCE

For necessary expenses, not otherwise provided for, in the conduct and support of science research and development activities, including research, development, operations, support, and services; maintenance; construction of facilities including repair, rehabilitation, revitalization, and modification of facilities, construction of new facilities and additions to existing facilities, facility planning and design, and restoration, and acquisition or condemnation of real property, as authorized by law; environmental compliance and restoration; space flight, spacecraft control, and communications activities; program management; personnel and related costs, including uniforms or allowances therefore, as authorized by 5 U.S.C. 5901–5902; travel expenses; purchase and hire of passenger motor vehicles; and purchase, lease, charter, maintenance, and operation of mission and administrative aircraft, $4,477,200,000 to remain available until September 30, 2011.

AERONAUTICS

For necessary expenses, not otherwise provided for, in the conduct and support of aeronautics research and development activities, including research, development, operations, support, and services; maintenance; construction of facilities including repair, rehabilitation, revitalization, and modification of facilities, construction of new facilities and additions to existing facilities, facility planning and design, and restoration, and acquisition or condemnation of real property, as authorized by law; environmental compliance and restoration; space flight, spacecraft control, and communications activities; program management; personnel and related costs, including uniforms or allowances therefore, as authorized by 5 U.S.C. 5901–5902; travel expenses; purchase and hire of passenger motor vehicles; and purchase, lease, charter, maintenance, and operation of mission and administrative aircraft, $507,000,000 to remain available until September 30, 2011.

EXPLORATION

For necessary expenses, not otherwise provided for, in the conduct and support of exploration research and development activities, including research, development, operations, support, and services; maintenance; construction of facilities including repair, rehabilitation, revitalization, and modification of facilities, construction of new facilities and additions to existing facilities, facility planning and design, and restoration, and acquisition or condemnation of real property, as authorized by law; environmental compliance and restoration; space flight, spacecraft control, and communications activities; program management, personnel and related costs, including uniforms or allowances therefore, as authorized by 5 U.S.C. 5901–5902; travel expenses; purchase and hire of passenger motor vehicles; and purchase, lease, charter, maintenance, and operation of mission and administrative aircraft, $3,963,100,000 to remain available until September 30, 2011.

SPACE OPERATIONS

For necessary expenses, not otherwise provided for, in the conduct and support of space operations research and development activities, including research, development, operations, support and services; space flight, spacecraft control and communications activities including operations, production, and services; maintenance; construction of facilities including repair, rehabilitation, revitalization and modification of facilities, construction of new facilities and additions to existing facilities, facility planning and design, and restoration, and acquisition or condemnation of real property, as authorized by law; environmental compliance and restoration; program management; personnel and related costs, including uniforms or allowances therefore, as authorized by 5 U.S.C. 5901–5902; travel expenses; purchase and hire of passenger motor vehicles and purchase, lease, charter, maintenance and operation of mission and administrative aircraft, $6,175,600,000, to remain available until September 30, 2011.

EDUCATION

For necessary expenses, not otherwise provided for, in carrying out aerospace and aeronautical education research and development activities, including research, development, operations, support, and services; program management; personnel and related costs, uniforms or allowances therefore, as authorized by 5 U.S.C. 5901–5902; travel expenses; purchase and hire of passenger motor vehicles; and purchase, lease, charter, maintenance, and operation of mission and administrative aircraft, $126,100,000, to remain available until September 30, 2011.

CROSS AGENCY SUPPORT

For necessary expenses, not otherwise provided for, in the conduct and support of science, aeronautics, exploration, space operations and education research and development activities, including research, development, operations, support, and services; maintenance; construction of facilities including repair, rehabilitation, revitalization, and modification of facilities, construction of new facilities and additions to existing facilities, facility planning and design, and restoration, and acquisition or condemnation of real property, as authorized by law; environmental compliance and restoration; space flight, spacecraft control, and communications activities; program management; personnel and related costs, including uniforms or allowances therefore, as authorized by 5 U.S.C. 5901–5902; travel expenses; purchase and hire of passenger motor vehicles; not to exceed $70,000 for official reception and representation expenses; and purchase, lease, charter, maintenance, and operation of mission and administrative aircraft, $3,400,600,000, to remain available until September 30, 2011.

OFFICE OF INSPECTOR GENERAL

For necessary expenses of the Office of Inspector General in carrying out the Inspector General Act of 1978, $36,400,000, to remain available until September 30, 2011.

ADMINISTRATIVE PROVISIONS
(INCLUDING TRANSFER OF FUNDS)

Notwithstanding the limitation on the duration of availability of funds appropriated to the National Aeronautics and Space Administration for any account in this Act, except for "Office of Inspector General," when any activity has been initiated by the incurrence of obligations for environmental compliance and restoration activities as authorized by law, such amount available for such activity shall remain available until expended.

Notwithstanding the limitation on the duration of availability of funds appropriated to the National Aeronautics and Space Administration for any account in this Act, except for "Office of Inspector General," the amounts appropriated for construction of facilities shall remain available until September 30, 2014.

Funds for announced prizes otherwise authorized shall remain available, without fiscal year limitation, until the prize is claimed or the offer is withdrawn.

Not to exceed 5 percent of any appropriation made available for the current fiscal year for the National Aeronautics and Space Administration in this Act may be transferred between such appropriations, but no such appropriation, except as otherwise specifically provided, shall be increased by more than 10 percent by any such transfers. Any transfer pursuant to this provision shall be treated as a reprogramming of funds under section 505 of this Act and shall not be available for obligation except in compliance with the procedures set forth in that section.

The unexpired balances of the Science, Aeronautics, and Exploration account, for activities for which funds are provided under this Act, may be transferred to the new accounts established in this Act that provide such activity. Balances so transferred shall be merged with the funds in the newly established accounts, but shall be available under the same terms, conditions and period of time as previously appropriated.

Funding designations and minimum funding requirements contained in any other Act shall not be applicable to funds appropriated by this title for the National Aeronautics and Space Administration.

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AA	Associate Administrator
AAD	Aircraft Aging and Durability
ABS	Advanced Business System
AC	Advanced Capabilities
ACCESS	Advanced Collaborative Connections for Earth System Science
ACE	Advanced Composition Explorer
ACES	Airspace Concepts Evaluation System
ACIS	Advanced CCD Imaging Spectrometer
ACRIMSat	Active Cavity Radiometer Irradiance Monitor Satellite
ACS	Advanced Camera for Surveys (Hubble Space Telescope instrument)
ADA	Associate Deputy Administrator
ADCAR	Astrophysics Data Curation and Archival Research
ADFT	Ascent Development Flight Test
ADP	Advanced Development Project
ADS	Astrophysics Data System
AEDC	Arnold Engineering Development Center
AEH	Advanced Environmental Health
AEMC	Advanced Environmental Monitoring and Control
AESP	Aerospace Education Services Program
AFB	Air Force Base
AFOSR	Air Force Office of Scientific Research
AFRL	Air Force Research Laboratory
AIA	Atmospheric Imaging Assembly (Solar Dynamics Observatory instrument)
AIM	Aeronomy of Ice in the Mesosphere
AirSAR	Airborne Synthetic Aperture Radar
AISR	Applied Information Systems Research
AITS	Agency Information Technology Services
ALI	Advanced Land Imager
ALS	Aircraft Logistics System
ALV	Air Launch Vehicle
AMM	Aircraft Management Module
AMMOS	Advanced Multi-Mission Operations System
AMMP	Aircraft Maintenance and Modification Program
AMO	Agency Management and Operations
AMR	Advanced Microwave Radiometer (Ocean Surface Topography Mission instrument)
AMS	Alpha Magnetic Spectrometer
AMSR-E	Advanced Microwave Scanning Radiometer for the Earth Observing System
ANSP	Air Navigation Service Provider
AO	Announcement of Opportunity
APG	Annual Performance Goal
APL	Applied Physics Laboratory (Johns Hopkins University)
APPEL	Academy of Program/Project and Engineering Leadership
APR	Annual Performance Report
APS	Advanced Polarimeter Sensor (Glory instrument)
ARC	Ames Research Center
ARISS	Amateur Radio on the International Space Station
ARMD	Aeronautics Research Mission Directorate
AS&T	Aeronautics Science and Technology
ASAP	Aerospace Safety Advisory Panel
ASE	Aero-Servo-Elastic
ASI	Agenzia Spaziale Italiana (Italian Space Agency)
ASP	Airspace Systems Program
ASPERA-3	Analyzer of Space Plasma and Energetic Atoms-3
ASR	Aviation Safety Report
ASRG	Advanced Stirling Radioisotope Generator
ASSP	Architecture for Survivable System Processing
AST	Advanced Subsonic Technology
ASTER	Advanced Spaceborne Thermal Emission Reflection Radiometer
ASVM	Aircraft and Systems Vulnerability Mitigation
ATG	Airspace Traffic Generator
ATLO	Assembly, Test and Launch Operations
ATM	Air Traffic Management
ATMS	Advanced Technology Microwave Sounder (NPOESS Preparatory Project instrument)
ATP	Aeronautics Test Program
ATV	Automated Transfer Vehicle
AU	Astronomical unit
AuRA	Autono Robust Avionics
AVIRIS	Airborne Visible/Infrared Imaging Spectrometer
AvSP	Aviation Safety Program
AvSa	Aviation Safety
BARREL	Balloon Array for Radiation-belt Relativistic Electron Losses
BATC	Ball Aerospace and Technology Corporation
BCAT-4	Binary Critical Aggregation Test- 4
BCP	Ball Commercial Platform
BE	Beyond Einstein
BEPAC	Beyond Einstein Program Assessment Committee
BFELoB	Budget Formulation and Execution Line of Business
BFEM	Budget Formulation Execution Manager
BHP	Behavioral Health and Performance
BPI	Budget Performance and Integration
BSIG	Business Systems Integration Group
BWB	Blended Wing Body
BWG	Beam Wave Guide
C&DH	Command and Data Handling
C3I	Command, Control, Communication Information
C3P	Commercial Cargo Crew Project
C3PO	Commercial Cargo Crew Program Office
C3S	Command, Control, and Communication Segment
C4P	Commercial Cargo Crew Capability Project

CAEP	Committee on Aviation Environmental Protection
CALIOP	Cloud-Aerosol LIdar with Orthogonal Polarization
CALIPSO	Cloud–Aerosol Lidar and Infrared Pathfinder Satellite Observations
CaLV	Cargo Launch Vehicle
CAN	Cooperative Agreement Notice
CAPTEM	Curation and Analysis Planning Team for Extraterrestrial Materials
CARA	California Association for Research in Astronomy
CARD	Constellation Architectural Requirements Document
CAS	Cross-Agency Support
CASP	Cross Agency Support Programs
CAST	Commercial Aviation Safety Team
CCD	Charge Coupled Device
CCMC	Community Coordinated Modeling Center
CCRI	Climate Change Research Initiative
CCSP	Climate Change Science Program
CDAP	Cassini Data Analysis Program
CDC	Centers for Disease Control
CDI	Congressionally Directed Items
CDL	Center for Distance Learning
CDR	Critical Design Review
CERES	Clouds and the Earth's Radiant Energy System
CESR	Centre d'Etude Spatiale des Rayonnements
CEU	Combined Electronics
CEV	Crew Exploration Vehicle
CFD	Computational Fluid Dynamics
CFE	Capillary Flow Experiment
CFM	Cryogenic Fluid Management
CFO	Chief Financial Officer
CGA	Corporate G&A
CGRO-EGRET	Compton Gamma-Ray Observatory– Energetic Gamma-Ray Experiment Telescope
ChemCam	Chemistry Camera
CheMin	Chemistry & Mineralogy Instrument
CHIPS	Cosmic Hot Interstellar Plasma Spectrometer
CHS	Crew Health and Safety
CI	Counter-intelligence
CICT	Computing, Information and Communications Technology
CINDI	Coupled Ion Neutral Dynamics Investigation
CIO	Chief Information Officer
CIPAIR	Curriculum Improvement Partnership Award for the Integration of Research
CIR	Combustion Integrated Rack
CIRA	Cooperative Institute for Research in the Atmosphere
CLARREO	Climate Absolute Radiance and Refractivity Observatory
CLV	Crew Launch Vehicle
CM&O	Center Management and Operations
CMAO	Contract Management Assistance Officer
CMB	Cosmic Microwave Background
CMC	Cargo Mission Contract
CME	Continuing Medical Education
CME	Coronal Mass Ejection
CMM	Contract Management Module
CMO	Center Management and Operations
CNES	Centre Nationale D'Etudes Spatiale (French Space Agency)
CO	Carbon Monoxide
CO2	Carbon Dioxide
COBE	Cosmic Background Explorer
CoF	Construction of Facilities
CONAE	Argentina's National Committee of Space Activities
CoNNeCT	Communication Navigation and Networking Reconfigurable Testbed
CONTOUR	Comet Nucleus Tour
CO-OP	Cooperative-Education
CORE	Central Operation of Resources for Educators
COS	Cosmic Origins Spectrograph
COTF	Classroom of the Future
COTR	Contracting Officer Technical Representative
COTS	Commercial Orbital Transportation Services
CPHS	Committee on the Protection of Human Subjects
C/NOFS	Communication/Navigation Outage Forecast System
CRaTER	Cosmic Ray Telescope for the Effects of Radiation
CRI	Center for Rotorcraft Innovation
CrIS	Cross-track Infrared Sounder (NPOESS Preparatory Project instrument)
CSA	Canadian Space Agency
CSAR	Cost and Schedule Analysis Report
CSC	Computer Sciences Corporation
CSI	Constellation Services International
CSPE	Colorimetric Solid Phase Extraction
CT	Counter-terrorism
CVB	Constrained Vapor Bubble
Cx	Constellation Systems
CxRS	Constellation Reconfiguration System
CxTF	Constellation Training Facility
CY	Calendar Year
CZAP	Center Zoned Architecture Project
DAAC	Distributed Active Archive Centers
DAFT	Dust and Aerosol Measurement Facility Test
DAN	Dynamic Albedo of Neutrons
DAP	Data Analysis Program
DARPA	Defense Advanced Research Projects Agency
DCAA	Defense Contract Audit Agency
DCAS	Defense Contract Audit Service
DDAP	Discovery Data Analysis Program
DDT&E	Design, Development, Test, and Evaluation
DERA	Defense Evaluation and Research Agency

DESDynI	Deformation, Ecosystem Structure, and Dynamics of Ice
DEVELOP	Digital Earth Virtual Environment and Learning Outreach Program
DFRC	Dryden Flight Research Center
DIXI	Deep Impact Extended Investigation of Comets
DLN	Digital Learning Network
DLR	Deutches Zentrum für Luft- Raumfahrt (German Aerospace Center)
DM	Demonstration motors
DOD	Department of Defense
DOE	Department of Energy
DOI	Department of Interior
DOL	Department of Labor
DORIS	Doppler Orbitography by Radiopositioning Integrated by Satellite (Ocean Surface Topography Mission instrument)
DOT	Department of Transportation
DPR	Dual-frequency Precipitation Radar (Global Precipitation Measurement instrument)
DRS	Disturbance Reduction System
DSI	Deutsches SOFIA Institut
DSMS	Deep Space Mission System
DSN	Deep Space Network
DSX	Deployable Structures Experiment
DTN	Disruption Tolerant Networking
DUNS	Data Universal Numbering System
D&B	Dun and Bradstreet
E&PO	Education and Public Outreach
EA	Enterprise Architecture
EAFB	Elmendorf Air Force Base
EAP	Educator Astronaut Program
EarthKAM	Earth Knowledge Acquired by Middle School Students
EAS	Efficient Aircraft Spacing
EASI	Efficient Aerodynamic Shapes and Integration
ECANS	Exploration Communication and Navigation Systems
ECC	Education Coordinating Committee
ECLSS	Environmental Control and Life Support System
ECR	Environmental Compliance and Restoration
ECT	Energetic Particle, Composition and Thermal Plasma
ED	Education
EDL	Entry, Descent, and Landing
EDMD	Exploration Technology Development Program
EDS	Earth Departure Stage
EEE	Evolution of EOSDIS Elements
EELV	Evolved Expendable Launch Vehicle
EEO	Equal Employment Opportunity
EFASC	Electric Field and Search Coil
EF	Exposed Facility
EFI	Electric Field Instrument (Thermal Emission Imaging System instrument)
EFPO	Education Flight Projects
EFPM	Efficient Flight Path Management
EFW	Electric Field and Waves
EGRET	Energetic Gamma Ray Experiment Telescope
EHRI	Enterprise Human Resources Integration
EIRB	Extragalactic Infrared Background
EIS	Extreme Ultraviolet Imaging Spectrometer
EJSM	Europa Jupiter System Mission
ELC	ExPRESS Logistics Carrier
ELM-ES	Experiment Logistics Module- Exposed Section
ELC	ExPRESS Logistics Carriers
ELV	Expendable Launch Vehicle
EMA	Educational Media Archives
EMC	Exploration Medical Capability
EMFISIS	Electric and Magnetic Field Instrument Suite and Integrated Science
ENA	Energetic Neutral Atom
ENose	Electronic nose
EO-1	Earth Observing One Mission
EOS	Earth Observing System
EOSDIS	Earth Observing System Data and Information System
EP/TOMS	Earth Probe/ Total Ozone Mapping Spectrometer
EPA	Environmental Protection Agency
EPN	Effective Perceived Noise
EPNdB	Effective Perceived Noise in Decibels
e-PD	e-Professional Development
EPOCh	Extrasolar Planet Observations and Characterization
EPOXI	Extrasolar Planet Observation and Deep Impact Extended Investigation
EPSCoR	Experimental Program to Stimulate Competitive Research
ERA	Environmentally Responsible Aviation
ERBS	Earth Radiation Budget Sensor
ESA	European Space Agency
ESAS	Exploration Systems Architecture Study
ESES	Electrical Systems Engineering Services
ESD	Earth Science Division
ESDR	Earth System Data Records
ESM	Earth Systematic Missions
ESMD	Exploration Systems Mission Directorate
ESRT	Exploration Systems Research and Technology
ESS	Earth Systems Science
ESSAC	NASA Earth System Science and Applications Advisory Committee
ESSP	Earth System Science Pathfinder
ESTCP	Endeavor Science Teach Certificate Program
ESTO	Earth Science Technology Office
ESTP	Earth Science Technology Program
ET	External Tank
ETD	Exploration Technology Development
ETDP	Exploration Technology Development Program
ETM	Enhanced Thematic Mapper

EUSO	Extreme Universe Space Observatory
EUV	Extreme-Ultraviolet
EVA	Extravehicular Activity
EVE	Extreme-ultraviolet Variability Experiment (Solar Dynamics Observatory instrument)
EVM	Earned Value Management
EXEP	Exoplanet Exploration Program
ExPRESS	Expedite the Processing of Experiments to the Space Station
FA	Fundamental Aeronautics
FAA	Federal Aviation Administration
FACET	Future Air Traffic Management Concepts Evaluation
FAP	Fundamental Aeronautics Program
FAR	Faculty Awards for Research
FAR	Federal Acquisition Regulation
FAST	Facilitated Access to the Space Environment for Technology Development and Training
FAST	Fast Auroral Snapshot
FC	Framing camera
FCIP	Federal Career Intern Program
FCOD	Flight Crew Operations Directorate
FDA	Federal Drug Administration
FDCC	Federal Desktop Core Configuration
FDMS	Federal Data Management System
FEA	Federal Enterprise Architecture
FEAC	Federal Enterprise Architecture Certification
FFATA	Federal Funding Accountability and Transparency Act
FFMIA	Federal Financial Management Improvement Act of 1996
FFS	Fee for service
FGM	Fluxgate Magnetometer (Thermal Emission Imaging System instrument)
FGS	Fine Guidance Sensor
FIPS	Federal Information Processing Standard
FIRST	For Inspiration and Recognition of Science andTechnology
FLEX	Flame Extinguishment Experiment
FLITECAM	First Light Infrared Test Experiment Camera
FLX	Flight Experiment
FMA	Force = Mass x Acceleration
FMI	Finnish Meteorological Institute
FMLoB	Financial Management Line of Business
FOC	Full Operational Capability
FOSS	Fiber Optic Strain System
FPA	Focal Plane Array
FPP	Focal Plane Package
FPPS	Federal Personnel and Payroll System
FS	First Stage
FTE	Full Time Equivalency
FTP	Foundational Technology Program
FTV	Flight Test Vehicle
FUSE	Far Ultraviolet Spectroscopic Explorer
FUV	Far Ultraviolet
FY	Fiscal Year
G&A	General and Administrative
GALEX	Galaxy Evolution Explorer
GAO	Government Accountability Office
GBM	Gamma-ray Burst Monitor (Gamma-ray Large Area Telescope instrument)
GCCE	Global Climate Change Education
GCRP	Global Change Research Program
GEO	Geosynchronous Earth Orbit
GEOSS	Global Earth Observation System of Systems
GES DAAC	GSFC Earth Science Distributed Active Archive Center
GeV	Gigaelectron volt
GHz	Gigahertz
GI	Guest Investigator
GIFTS	Geosynchronous Imaging Fourier Transform Spectrometer
GIP	Guest Investigator Program
GISS	Goddard Institute for Space Studies
GLAST	Gamma–ray Large Area Space Telescope
GLOBE	Global Learning and Observations to Benefit the Environment
GMAO	Global Modeling and Assimilation Office
GMI	GPM Microwave Imager (Global Precipitation Measurement instrument)
G-MOO	Geospace Missions of Opportunity
GN	Ground Networks
GNC	Guidance, navigation and control
GO	Ground Operations
GOES	Geostationary Operational Environmental Satellite
GOLD	Global-scale Observations of the Limb and Disk
GOME-2	Global Ozone Monitoring Experiment-2
GP–B	Gravity Probe–B
GPM	Global Precipitation Measurement
GPRA	Government Performance Results Act of 1993
GPS	Global Positioning System
GRACE	Gravity Recovery and Climate Experiment
GRAIL	Gravity Recovery and Interior Laboratory
GRaND	Gamma Ray and Neutron Detector
GRB	Gamma Ray Burst
G-RBSP	Geospace- Radiation Belt Storm Probes
GRC	Glenn Research Center
GRC-PBS	Glenn Research Center–Plum Brook Station
GREAT	German Receiver for Astronomy at Terahetz
GRGT	Guam Remote Ground Terminal
GSA	General Services Administration
GS	Ground Support
GSFC	Goddard Space Flight Center
GSRP	Graduate Student Research Project
GSSR	Goldstone Solar System Radar
GWAC	Government Wide Acquisition Contracts
HALE	High-Altitude, Long-Endurance
HBCU	Historically Black Colleges and Universities

HCAS	Human Capital Accountability System
HCIE	Human Capital Information Environment
HE	Higher Education Project
HECC	High End Computing Capability
HETE–2	High Energy Transient Explorer
HETG	High Energy Transmission Grating
HFFF	Hyper-velocity Free Flight Facility
HFI	High Frequency Instrument
HFT	Hypersonic Tunnel Facility
HgCdTe	Mercury-Cadmium-Telluride
HHC	Health and Human Countermeasures
HH&P	Human Health & Performance
HHS	Health and Human Services
HIFI	Heterodyne Instrument for the Far Infrared
HIPO	High-speed Imaging Photometer for Occultation
HIRDLS	High Resolution Dynamic Limb Sounder
HIRES	High Resolution Echelle Spectrometer
HiRISE	High Resolution Imaging Science Experiment
HMI	Helioseismic and Magnetic Imager (Solar Dynamic Observatory instrument)
HMMES	High-Mass Mars Entry Systems
HMP	Human Measures and Performance
HPS	Heliophysics Subcommittee
HQ	NASA Headquarters
HR	Human Resource
HRC	High Resolution Camera
HRIS	Human Resources Information System
HRLoB	Human Resources Management Line of Business
HRP	Human Research Program
HRRLS	Highly Reliable Reusable Launch Systems
HSB	Humidity Sounder for Brazil
HSFO	Human Space Flight Operations
HSI	Hispanic Service Institutions
HSPD	Homeland Security Presidential Directive
HSR	High-Speed Research
HSRT	Human Systems Research and Technology
HST	Hubble Space Telescope
HSTS	Heuristic Scheduling Test-bed System
HTF	Hypersonic Test Facility
HTV	H-II Transfer Vehicle
HVAC	Heating, Ventilating and Air Conditioning
HVGR	Hypervelocity Gun Range
HWB	Hybrid Wing Body
Hy-BoLT	Hypersonic Boundary Layer Transition Flight Experiment
I&T	Integration and test
IAE	Integrated Acquisition Environment
IAM	Integrated Asset Management
IAR	Independent Annual Review
IBEX	Interstellar Boundary Explorer
IBPD	Integrated Budget and Performance Document
ICAO	International Civil Aviation Organization
ICC-VLC	Integrated Cargo Carrier - Vertical Light Deployable
ICESat	Ice, Cloud, and Land Elevation Satellite
ICSMR	Budget/management review
IDIQ	Indefinite Delivery Indefinite Quantity
IDPS	Interface Data Processing Segment
IDS	Interdisciplinary Science
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IEMP	Integrated Enterprise Management Program
IFMP	Integrated Financial Management Program
IG	Inspector General
IIFD	Integrated Intelligent Flight Deck
IIRT	Integrated Independent Review Team
ILN	International Lunar Network
IMAGE	Imager for Magnetopause–to–Aurora Global Exploration
IMD	Institutional Management and Dissemination
INPE	Brazilian Institute for Space Research
INSPIRE	Interdisciplinary National Science Program Incorporating Research and Education Experiences
InSPACE-2	Investigating the Structure of Paramagnetic Aggregates from Colloidal Emulsions - 2
IOC	Initial Operational Capability
IOM	Institute of Medicine
IP	Intellectual Property
IPAC	Infrared Processing and Analysis Center
IPAO	Independent Program Assessment Office
IPCC	International Panel on Climate Change
IPD	Integrated Powerhead Demonstrator
IPIA	Improper Payments Improvement Act
IPO	Integrated Program Office
IPP	Innovative Partnerships Program
IPS	Integrated Planning System
IPY	International Polar Year
IR	Infrared
IRA	Institutional Research Awards
IRAC	Integrated Resilient Aircraft Controls
IRAS	Infrared Astronomical Satellite
IRD	Interface Requirement Document
IRM	Information Resources Management
IRMA	Integrated Risk Management Application
IRSA	NASA/IPAC Infrared Science Archive
IRT	Independent Review Team
ISAS	Institute of Space and Astronautical Science
ISIM	Integrated Science Instrument Module
ISM	Interstellar Medium
ISP	In-Space Propulsion Project
ISRO	Indian Space Research Organization
ISRP	Integrated Systems Research Program
ISRU	In-Situ Resource Utilization
ISS	International Space Station
ISSC	International Space Science Collaboration

ISSMP	International Space Station Medical Program
ISTP	Integrated Space Transportation Plan
IT	Information Technology
ITA	Independent Technical Authority
ITAR	International Traffic in Arms Regulation
ITAS	Integrated Tailored Aerostructures
ITF	Integrated Training Facility
ITI	Integrated Technology Infrastructure
ITILoB	Integrated Technology Infrastructure Line of Business
IUVS	Imaging Ultraviolet Spectrometer
IVHM	Integrated Vehicle Health Management
IV&V	Independent Verification and Validation
IXO	International X-ray Observatory
JADE	Jovian Auroral Distributions Experiment
JAXA	Japan Aerospace Exploration Agency
JBOSC	Joint Base Operations Support Contract
JCAA	Joint Council on Aging Aircraft
JCSDA	Joint Center for Satellite Data Assimilation
JDAP	Jupiter Data Analysis Project
JDEM	Joint Dark Energy Mission
JEDI	Jupiter Energetic particle Detector Instrument
JEM PM	Japanese Experiment Module Pressured Module
JHU	John Hopkins University
JHU-APL	Johns Hopkins University–Applied Physics Laboratory
JOI	Jupiter Orbit Insertion
JPDO	Joint Planning and Development Office
JPFP	Harriet Jenkins Pre-doctoral Fellowship Program
JPL	Jet Propulsion Laboratory
JSC	Johnson Space Center
JSC-WSTF	Johnson Space Center–White Sands Test Facility
JSG	Joint Steering Group
JSOST	Joint Sub-Committee on Ocean Science And Technology
JWST	James Webb Space Telescope
KaPR	Ka-band Precipitation Radar
KDP	Key Decision Point Review
KeV	Kiloelectron Volts
KHz	Kilohertz
KI	Keck Interferometer
KNMI	Royal Netherlands Meteorological Institute
KSC	Kennedy Space Center
KuPR	Ku precipitation radar
kW	Kilowatt
LADEE	Lunar Atmosphere and Dust Environment Explorer
LAMP	Lyman-Alpha Mapping Project
LAN	Local Area Network
LANL	Los Alamos National Laboratory
LaRC	Langley Research Center
LAS	Launch Abort System
LASER	Lunar Advanced Science and Exploration Research
LASP	Laboratory for Atmospheric and Space Physics (University of Colorado, Boulder)
LAT	Large Area Telescope (Gamma-ray Large Area Telescope instrument)
LBT	Large Binocular Telescope
LBTI	Large Binocular Telescope Interferometer
LCC	Launch Control Center
LCC	Life-Cycle-Cost
LCCR	Lunar Capability Concept Review
LCROSS	Lunar Crater Observation and Sensing Satellite
LDCM	Landsat Data Continuity Mission
LDEX	Lunar Dust EXperiment
LEAP	Low Emissions Alternative Power
LEARN	Learning Environments and Research Network
LEED	Leadership in Energy and Environment Design
LEND	Lunar Exploration Neutron Detector
LEO	Low Earth Orbit
LETG	Low Energy Transmission Grating
LFI	Low Frequency Instrument
LH2	Liquid Hydrogen
LISA	Laser Interferometer Space Antenna
LMM	Light Microscopy Module
LMS	Launch and Mission Systems
LN2	Liquid Nitrogen
LOLA	Lunar Orbiter Laser Altimeter
LoB	Lines of Business
LOX	Liquid Oxygen
LPRP	Lunar Precursor Robotic Program
LQP	Lunar Quest Program
LRA	Laser Retroreflector Array (Ocean Surface Topography Mission instrument)
LRD	Launch Readiness Date
LRO	Lunar Reconnaissance Orbiter
LROC	Lunar Reconnaissance Orbiter Camera
LRR	Launch Readiness Review
LSAH	Longitudinal Study of Astronaut Health
LSAM	Lunar Surface Access Module
L-SDT	Lunar Science Definition Team
LSCE	Laboratoire des Sciences du Climat et de l'Environment
LSH	Life Support and Habitation
LSP	Launch Services Program
LTP	Learning Technologies Project
LV	Launch Vehicle
LWS	Living with a Star
MA	Multiple Access
MAF	Manufacturing Facility
MAG	Magnetometer
MARDI	Mars Descent Imager
MAVEN	Mars Atmosphere and Volatile EvolutioN

MASTAP	Math Science Teacher and Curriculum Enhancement Program
MCC	Mission Control Center
MCR	Mission Confirmation Review
MD	Mission Directorate
MDAO	Multidisciplinary Design Analysis and Optimization
MDCA	Multi-User Droplet Combustion Apparatus
MDI	Mission Dependency Index
MdM	Metadata Manager
MDR	Mission Design Review
MEaSUREs	Making Earth System data records for Use in Research Environments
MECA	Mars Environmental Compatibility Assessment
MEO	Most Efficient Organization
MEP	Mars Exploration Program
MEPAG	Mars Exploration Program Analysis Group
MESSENGER	Mercury Surface, Space Environment, Geochemistry and Ranging
MET	Meteorology Package
METI	Ministry of Economy Trade and Industry (Japan)
MeV	Mega Electron Volts
MEX	Mars Express
MFMTC	National Force Measurement Technology Capability
MI	Minority Institutions
MIC	Mission Integration Contract
MIDEX	Medium-Class Explorer
Mini-RF	Radiation Frequency
MIRI	Mid-infrared Instrument (James Webb Space Telescope instrument)
MIs	Minority Institutions
MIT	Massachusetts Institute of Technology
MLP	Mobile Launch Platform
MLS	Microwave Limb Sounder
MMOD	Micrometeoroid/ Orbital Debris
MMRTG	Multi-missions Radioisotope Thermoelectric Generators
MMS	Magnetospheric Multiscale
MO	Missions of Opportunity
MO&DA	Mission Operations and Data Analysis
MOA	Memorandum of Agreement
MOE	Mission Operations Element
MoO	Mission of Opportunity
MoonROx	Moon Regolith Oxygen
MOPITT	Measurements of Pollution in the Troposphere
MOR	Mission Operations Review
MOU	Memorandum of Understanding
MPAR	Major Program Annual Report
MPE	Max-Planck-Institut für Extra-terrestriche Physik (Germany)
MPESS	Multi-Purpose Experiment Support Structure
MPLM	Multi-Purpose Logistics Module
MPS	Max-Planck-Institut für Sonnensystemforschung
MRO	Mars Reconnaissance Orbiter
MRM	Mini Research Module
MRR	Mission Requirement Request
MS	Missions Systems
MSFC	Marshall Space Flight Center
MSG	Magnetic Spectrometer
MSI	Minority-Serving Institute
MSL	Mars Science Laboratory
MSR	Mars Sample Return
MSRR	Materials Science Research Rack
MUREP	Minority University Research and Education Program
MUSES-C	Mu Space Engineering Spacecraft–C
MUSS	Multi-User Systems and Support
MUST	Motivating Undergraduate in Science and Technology
NAC	NASA Advisory Committee
NACC	NASA Ames Conference Center
NAFP	NASA Administrator's Fellowship Program
NAMMA	NASA African Monsoon Multidisciplinary Analyses
NAPA	National Academy of Public Administration
NAR	Non-Advocacy Review
NAS	National Airspace System
NASSMC	National Alliance of State Science and Mathematics Coalitions
NCAR	National Center for Atmospheric Research
NCAS	NASA Contract Assurance Services
NCI	NASA Communications Improvement
NCSER	National Center for Space Exploration Research
NEAR	Near-Earth Asteroid Rendezvous
NED	NASA/IPAC Extragalactic Database
NEI	NASA Explorer Institute
NEN	Near Earth Network
NEO	Near-Earth Object
NEOO	Near-Earth Object Observations
NEPER	NASA Education Program Evaluation Review
NES	NASA Explorer School
NESC	NASA Engineering and Safety Center
NETS	NASA Educational Technology Services
NExT	NASA Evolutionary Xenon Thruster
NextGen	Next Generation Air Transportation System
NFS	NASA FAR Supplement
NG	Northrop Grumman
NGATS	Next Generation Air Transportation System
NGIMS	Neutral Gas and Ion Mass Spectrometer
NGLT	Next Generation Launch Technology
NGST	Northrop Grumman Space Technology
NIA	National Institute of Aerospace
NICMOS	Near Infrared Camera and Multi-Object Spectrometer (Hubble Space Telescope instrument)

NIH	National Institute for Health
NIP	New Investigator Program
NIRCam	Near-Infrared Camera
NIRSpec	Near-Infrared Spectrometer
NISN	NASA Integrated Services Network
NIST	National Institute of Science and Technology
NIVR	Netherlands Agency for Aerospace Programmees
NLS	NASA Launch Services
NLSI	NASA Lunar Science Institute
NLT	NASA Learning Technologies
NMO	NASA Management Office
NMP	New Millennium Program
NMSU	New Mexico State University
NOAA	National Oceanic and Atmospheric Administration
NOAA-N	National Oceanic and Atmospheric Administration - NASA
NOFS	Navigation Outage Forecast System
NORCAT	Northern Centre for Advanced Technology, Inc.
NOx	Nitrogen Oxide
NPAT	National Partnership for Aeronautic Testing
NPD	NASA Policy Directive
NPOESS	National Polar–orbiting Operational Environmental Satellite System
NPP	NPOESS Preparatory Project
NPR	NASA Procedural Requirement
NRA	NASA Research Announcement
NRC	National Research Council
NRC	Nuclear Regulatory Commission
NRL	Naval Research Laboratory
NRO	National Reconnaissance Office
NSBRI	National Space Biomedical Research Institute
NSC	NASA Safety Center
NSF	National Science Foundation
NSRL	NASA Space Radiation Laboratory
NSSC	NASA Shared Services Center
NSSDC	National Space Science Data Center
NSTA	National Science Teachers Association
NSTC	National Science and Technology Council
NSTI-MI	NASA Science and Technology Institute for Minority Institutions
NSWPC	National Space Weather Program Council
NuSTAR	Nuclear Spectroscopic Telescope Array
NVO	National Virtual Observatory
NWP	Numerical Weather Prediction
O&SS	Operations and Sustaining Support
OA	Office of Audits
OCE	Office of the Chief Engineer
OCFO	Office of Chief Financial Officer
OCHMO	Office of the Chief Health and Medical Officer
OCIO	Office of Chief Information Officer
OCO	Orbiting Carbon Observatory
OFT	Orbital Flight Test
OGAs	Other Government Agencies
OHCM	Office of Human Capital Management
OI	Office of Investigations
OIG	Office of Inspector General
OLI	Operational Land Imager (Landsat Data Continuity Mission instrument)
OMB	Office of Management and Budget
OMC	Operations Management Council
OMI	Ozone Monitoring Instrument
OMPS	Ozone Mapping and Profiler Suite (NPOESS Preparatory Project instrument)
OMU	Other Minority Universities
ONERA	Office National d'Études et de Recherches Aérospatiales
OPAG	Outer Planets Assessment Group
OPF	Outer Planet Flagship
OPF	Orbiter Processing Facility
OPM	Office of Personnel Management
ORR	Operations Readiness Review
OSC	Orbital Sciences Corporation
OSD	Office of Secretary of Defense
OSIRIS	Origins Spectral Interpretation Resource Identification and Security
OSMA	Office of Safety and Mission Assurance
OSPP	Security and Program Protection
OSTM	Ocean Surface Topography Mission
OSTP	Office of Science and Technology Policy
OSTST	Ocean Surface Topography Science Team
OSU	Ohio State University
OTE	Optical Telescope Element
OVWST	Ocean Vector Winds Science Team
PAAC	Program Analysis And Control
PACS	Photodetector Array Camera and Spectrometer
PA&E	Program Analysis and Evaluation
PAIR	Partnership Awards for the Integration of Research into Undergraduate Education
PAR	Performance and Accountability Report
PAR	Program Acceptance Review
PARASOL	Polarization & Anisotropy of Reflectances for Atmospheric Sciences coupled with Observations from a Lidar
PART	Program Assessment Rating Tool
PB	President's Budget
PBR	President's Budget Request
PBS	President's Budget Submit
PCA	Program Commitment Agreement
PCOS	Physics of the Cosmos Program
PDR	Preliminary Design Review
PDS	Planetary Data System
PDT	Procurement Development Team
P&F	Particles and Fields
PI	Principal Investigator
PIC	Program Integration Contract
PICA	Phenolic Impregnated Carbon Ablator

PII	Performance Improvement Initiative
PIR	Program Implementation Review
PIV	Personal Identification Verification
PLM	Project Lifecycle Management
PLdB	Perceived Level in decibels
PMA	President's Management Agenda
PMC	Program Management Council
PMCs	Polar Mesospheric Clouds
PMO	Program Management Office
PMP	Program Management Plan
PMS	Program Mission Support
PNAR	Preliminary Non-Advocate Review
PNT	Positioning, Navigation, and Timing
POES	Polar Operational Environmental Satellites
PP&E	Property, Plant, and Equipment
PPAR	Preliminary Program Acceptance Review
PPBE	Planning Programming Budget and Evaluation
PPS	Precipitation Processing System
PR	Precipitation Radar
PROX	Proximity Communication System
PRV	Plant Replacement Value
PSBR	Proton Spectrometer Belt Research
PSM	Program Science Management
PSR	Physical Sciences Research
PTF	Plan, Train, Fly
PWR	Pratt and Whitney Rocketdyne
QAT	Quiet Aircraft Technology
QTR	Quarter
QuickSCAT	Quick Scatterometer
R&A	Research and Analysis
R&D	Research and Development
RAC	Robotic Arm Camera
RBSP	Radiation Belt Storm Probes
RBSPICE	Radiation Belt Science of Protons, Ions, Composition, and Electrons
REASoN	Research, Education and Applications Solutions Network
REMS	Rover Environmental Monitoring System
RF	Radio Frequency
RFI	Request for Information
RFP	Request for Proposal
RHESSI	Reuven Ramaty High Energy Solar Spectroscopic Imager
RI	Research Institutions
RLEP	Robotic Lunar Exploration Program
RMB	Reimbursable
RMP	Risk Mitigation Phase
RND	Results Not Demonstrated
ROA	Remotely Operated Aircraft
ROSES	Research Opportunities in Space and Earth Science
Roskomos	Russian Federal Space Agency
RPCT	Radioisotope Power Conversion Technology
RpK	Rocket Plane-Kistler
RPS	Radioisotope Power System
RPT	Rocket Propulsion Testing
RR	Readiness Review
RS	Russian Segment
RSDO	Rapid Spacecraft Development Office
RSP	Radioisotope Power Systems
RSRB	Reusable Solid Rocket Booster
RSRM	Reusable Solid Rocket Motor
RTG	Radioisotope Thermoelectric Generators
RW	Reaction Wheel
RXTE	Rossi X–ray Timing Explorer
S&MA	Safety and Mission Assurance
SA	Single Access
SAA	Space Act Agreement
SAC-D	Satellite de Aplicaciones Cientificas–D (Argentina)
SAGE	Stratospheric Aerosol and Gas Experiment
SAIC	Science Applications International Corporations
SALMON	Stand Alone Missions of Opportunity
SAM	Sample Analysis at Mars
SAMPEX	Solar Anomalous and Magnetospheric Particle Explorer
SAMS	Space Acceleration Measurement System
SAO	Smithsonian Astrophysical Observatory
SAP	Core Financial System Software
SAR	Synthetic Aperture Radar
SATERN	System for Administrative Training and Educational Resources for NASA
SATS	Small Aircraft Transportation System
SAU	Strategic Airspace Usage
SBA	Small Business Administration
SBC	Small Business Concern
SBIR	Small Business Innovative Research
SBPRA	Small Business Paperwork Relief Act
SBRS	Santa Barbara Remote Sensing
SBT	Space-Based Technology
SBUV	Solar Backscatter Ultraviolet
SC	Shared Capabilities
SCaN	Space Communications and Navigation
SCAP	Strategic Shared Capability Assets Program
SCEM	Scientific Context for Exploration of the Moon
SCEP-CO-OP	Student Career Experience Program Cooperative
SCFO	Space Flight Crew Operations
SCIP	Space Communications Constellation Integration Project
SCM	Search Coil Magnetometer (Thermal Emission Imaging System instrument)
SCP	Space Communications Program
SDL	Space Dynamics Laboratory
SDLC	System Development Life Cycle
SDO	Solar Dynamics Observatory
SDR	System Design Review

SDSC	Satish Dhawan Space Center
SDT	Science Definition Team
SEC	Sun–Earth Connection
SE&I	System Engineering and Integration
SELENE	Selenological and Engineering Explorer (Japan)
SEMAA	Science Engineering Mathematics Aerospace Academy
SES	Senior Executive Service
SESFA	Space Environments Simulation Facilities Alliance
SET	Space Environmental Spacecraft
SETI	Search for Extra-Terrestrial Intelligence
SEWP	Solutions for Enterprise-Wide Procurement
SFS	Space and Flight Support
SFW	Subsonic Fixed Wing
SGSS	Space Network Ground Segment Sustainment
SHERE	Shear History Extensional Rheology Experiment
SHFH	Space Human Factors and Habitability
SHM	Scalar Helium Magnetometer
SIG	Systems Integration Group
SIM	Space Interferometry Mission
SIMBAD	Set of Identifications, Measurements, and Bibliography for Astronomical Data
SIR	System Integration Review
SIRTF	Space Infrared Telescope Facility
SLI	Student Launch Initiative
SLR	Satellite Laser Ranging
SM-4	Servicing Mission–4
SMA	Safety and Mission Assurance
SMAP	Soil Moisture Active and Passive
SMC/TEL	Space and Mission Command/Test and Evaluation Directorate
SMD	Science Mission Directorate
SMEX	Small Explorer
SMOR	Science Management Operations Review Team
SMOV	Servicing Mission Orbital Verification
SMP	Software Management Plan
SMS	Safety and Mission Success
SN	Space Network
SNI	Simultaneous, non-interfering
SNSB	Swedish National Space Board
SOAREX	Sub-Orbital Aerodynamic Re-entry Experiment
SOC	Security Operations Center
SOC	Solar Orbiter Collaboration
SOFIA	Stratospheric Observatory for Infrared Astronomy
SOHO	Solar Heliospheric Observer
SOMD	Space Operations Mission Directorate
SORCE	Solar Radiation and Climate Experiment
SORT	SOFIA Options Review Team
SpaceX	Space Exploration and Technology
SPC	Solar Orbiter Collaboration
SPD	Space Product Development
SPDF	Space Physics Data Facility
SPDM	Special Purpose Dexterous Manipulater
SPF	Software Production Facility
SPIRE	Spectral and Photometric Imaging Receiver
SPL	Solar Probe Lite
SPOC	Space Program Operations Contract
SPoRT	Short-term Prediction Research and Transition Center
SR	Senior Review
SR	Space Radiation
SRB	Solid Rocket Booster
SRB	Standing Review Board
SRD	Systems Requirements Document
SRG	Stirling Radioisotope Generator
SRLI	Surgical Research Laboratory, Inc.
SRR	System Requirement Review
SRU	Stellar Reference Unit
SRW	Subsonic Rotary Wing
SS	Steady State
SSC	Stennis Space Center
SSE	Solar System Exploration
SSME	Space Shuttle Main Engines
SSP	Space Shuttle Program
SSS	Sea Surface Salinity
SST	Solid State Telescope (Thermal Emission Imaging System instrument)
ST	Space Technology
STATIC	SupraThermal And Thermal Ion Composition
STaR	Shuttle Transition and Retirement
STEM	Science, Technology, Engineering, and Mathematics
STEREO	Solar Terrestrial Relations Observatory
STI	Scientific and Technical Information
STIS	Space Telescope Imaging Spectrograph (Hubble Space Telescope instrument)
STOCC	Space Telescope Operations Control Center
STOL	Short take-off and landing
STP	Solar Terrestrial Probes
STS	Space Transportation System
STScI	Space Telescope Science Institute
STSS	Space Tracking Surveillance System
STTR	Small Business Technology Transfer Program
SVA	Strategic Vehicle Architecture
SVD	System Vulnerability Detection
SwRI	Southwest Research Institute
SXS	Soft X-ray Spectrometer
T2	Technology transfer
TA	Technical Authority
TAA	Technology Assistance Agreements
TBD	To Be Determined
TBM	Time-based metering

TCU	Tribal Colleges and Universities
TDRS	Tracking and Data Relay Satellite
TDRSS	Tracking and Data Relay Satellite System
TE	Technical Excellence
TEGA	Thermal and Evolved Gas Analyzer
THEMIS	Time History of Events and Macroscale Interactions during Substorms
TIM	Total Irradiance Monitor (Glory instrument)
TIMED	Thermosphere, Ionosphere, Mesosphere, Energetics and Dynamics
TIMS	Thermal Infrared Multispectral Scanner
TIRS	Thermal Infrared Sensor
TLI	Trans-Lunar Injection
TMC	Technical, Management and Cost
TM	Technical Monitors
TMI	TRMM Microwave Imager
T-NAR	Technology Non-Advocate Review
TNO TPD	Netherlands Organization for Applied Scientific Research - Institute of Applied Physics
TOC	Test Operations Contract
TO	Thrust Oscillation
TOF	Time of Flight
TOMS	Total Ozone Mapping Spectrometer
TOMS-EP	Total Ozone Mapping Spectrometer - Earth Probe
TOPEX	Topographic Experiment for ocean circulation
TPF	Terrestrial Planet Finder
TPS	Thermal Protection System
T&R	Transition and Retirement
TRACE	Transition Region and Coronal Explorer
TRL	Technology Readiness Level
TRMM	Tropical Rainfall Measuring Mission
TSDIS	TRMM Science Data and Information System
TTA	Technical Task Agreement
TT&C	Flight Tracking Telemetry and Command
TVC	Thermal Vacuum Chambers
TWINS	Two Wide–angle Imaging Neutral–atom Spectrometers
UAS	Uninhabited Air Systems
UAV	Unmanned Aerial Vehicle
UAZ	University of Arizona
UCLA	University of California at Los Angeles
UEET	Ultra–efficient Engine Technology
UI	University of Iowa
ULA	United Launch Alliance
ULDB	Ultra Long Duration Balloon
ULF	Utilization and Logistics Flight
UNCFSP	United Negro College Fund Special Programs
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNITeS	Unified NASA Information Technology Services
UPS	Uninterruptible power supply
URC	University Research Center
URETI	University Research Engineering, and Technology Institute
USA	United Space Alliance
USAF	United States Air Force
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
USGS	United States Geological Survey
USOS	United States Orbital Segment
USRA	Universities Space Research Association
USRP	Undergraduate Student Research Project
UTD	University of Texas at Dallas
UTMB	University of Texas Medical Branch
UV	Ultraviolet
UVS	UV Spectrometer
VAB	Vehicle Assembly Building
VAMS	Virtual Airspace Modeling and Simulation
VAO	Virtual Astronomical Observatory
VCAMS	Vehicle Cabin Atmosphere Monitoring
VCL	Vegetation Canopy Lidar
VExAG	Venus Exploration Analysis Group
VI	Vehicle Integration
VIIRS	Visible-Infrared Imager Radiometer Suite (NPOESS Preparatory Project instrument)
VIR	Visible and Infrared mapping spectrometer
VSE	Vision for Space Exploration
VSP	Vehicle Systems Program
VST	Vehicle Safety Technologies
WATR	Western Aeronautical Test Range
WAVES	Radio and Plasma Waves Instrument (Wind)
WCF	Working Capital Fund
WFC-3	Wide Field Camera–3 (Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations instrument)
WISE	Wide-field Infrared Survey Explorer
WMAP	Wilkinson Microwave Anisotropy Probe
WRS	Water Recovery System
WSC	White Sands Complex
WST	Weather Safety Technologies
WSTF	White Sands Test Facility
XRT	X-Ray Telescope
XMM	X-ray Multi-mirror Mission (Newton Observatory)

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